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ABSTRACT

The objectives of this project to increase the effectiveness and efficiency of American Indian education through the Bureau of Indian Affairs (BIA) were (1) a system analysis of the BIA schools to identify educational goals and objectives and the critical factors contributing to or impeding eeducational effectiveness in achieving the goals; (2) formulation of alternative programs responsive to the educational goals and objectives, taking into account the critical factors previously identified; and (3) development of cost-effectiveness models for estimating the probable impacts and relative efficiencies of alternative programs for rational planning and budgeting. Goals and objectives were identified by a process of interviews and projective exercises with educational change agents in the BIA education system. Actual operations were observed in 30 BIA schools on 6 reservations and in Alaska and Oklahoma. Some 150 programs were formulated to satisfy several degrees of budget constraint. Twelve district models were designed to deal with specific school system planning, school management, and instructional problems. The document contains objectives, methods, and results of the project; a discussion of goals of Indian education; a summary of programs developed to respond to the goals of Indian education and its problems; narrative sketches of the models that were designed; and a discussion of the processes of change and implementation. Related documents are ED 032 991 through ED 032 994. (JH)

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System Analysis, Program Development, And Cost-Effectiveness Modeling Of Indian Education

For the Bureau of Indian Affairs

VOLUME I

SUMMARY AND RECOMMENDATIONS

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Prepared for:

Mr. Charles Zellers
Assistant Commissioner
for Education
Bureau of Indian Affairs
Department of the Interior
Washington, D. C. 20240

ABT ASSOCIATES INC.
55 Wheeler Street
Cambridge, Mass.
02138

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The authors wish to express their appreciation for the time and thought contributed generously by hundreds of Indian students, parents, tribal and community leaders, and BIA educators. Their acquaintance has been both professionally invaluable and a personal privilege. Particularly helpful have been a number of BIA officials responsible for the direction of this project. Among them are Mr. Charles Zellers, Mr. Madison Coombs, Dr. Desmond Phillips, Dr. Richard Keating, and Mr. John Sykes.

Chapter I. Objectives, Methods, and Results

The critical problems of low Indian educational achievement and attendant poverty have been recognized by the BIA for many years, and long before their recent "discovery" by the BIA's critics. Until recently, however, there was little awareness of the availability of system analysis and social science research methods that could be applied to education problems. With the increasing application of these methods to compensatory education, the BIA Education Division sought to apply them to its specific problems in Indian education.

The general objective of the BIA Education Division is to develop means for increasing both the effectiveness and the efficiency of the education of American Indians. Accordingly in May, 1968, a contract was signed with Abt Associates Inc. with the intent of jointly developing such means. Abt Associates Inc. had pioneered in the application of system analysis to education, in instruction through curriculum innovations such as simulation games for social studies, sciences, and language arts; in teacher evaluation and training for the Job Corps; and in education system analysis and planning using cost-effectiveness models programmed for computers for the U. S. Office of Education.

The objectives for the project believed to be instrumental to achieving the BIA Education Division's general objective of increased education effectiveness and efficiency were agreed to be:

-- A system analysis of the BIA school to identify educational goals and objectives and the critical factors contributing to or impeding educational effectiveness in achieving the goals;

-- Formulation of alternative programs responsive to the educational goals and objectives, taking into account the critical factors previously identified;

-- Development of cost-effectiveness models for estimating the probable impacts and relative efficiencies of alternative programs for rational planning and budgeting.

The method employed for carrying out the system analysis was the classical five-fold one of identifying goals and objectives (also known as criteria of effectiveness), determining the nature of the actual operations, estimating the discrepancies between objectives and actualities, determining what factors are critical to achieving the goals, and identifying available resources and techniques for overcoming obstacles to the achievement of the goals. The last element of the system analysis phase merges naturally into the first element of the programs formulation phase.

Goals and objectives were identified by a process of several hundred interviews and projective exercises with representative samples of five groups determined to be significant change agents in the BIA education system: administrators, teachers, students, parents, and education consultants. All five groups are in substantial agreement that the goal of Indian education should be the Indian achievement of equality of opportunity with non-Indian Americans. Equality of educational opportunity is often defined as equal opportunity for high school graduation and college or technical school entry.

The phrase "equality of educational opportunity" can be defined in terms of equality of "inputs," equality of education processes, or equality of educational "outputs" or results.

If "equality of educational opportunity" is defined in input terms, both inputs of students with their pre-school educations, and the in-school factors of teachers, curricula, facilities, and equipment must be considered. Since most Indian children begin school with the environmental handicaps of rural poverty, cultural isolation, low level of "parent" education, and in many cases (particularly Navajo and Eskimo) a non-English native language, equality of educational inputs requires greatly superior in-school resources of teachers, curricula, facilities, and equipment to balance the inadequate pre-school preparation of most Indian children. Such superior education has not been and cannot be supplied by the BIA on its current budget of some $1,000 per student year, which must also pay for the boarding expenses of nearly half the students.*

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*By way of comparison, the Job Corps spent from $7,000 to $9,000 per student year for its resident high school-level education program.

If equality of educational opportunity is defined in process terms, then the BIA school system as it operates today offers it, at least the in-school part. On the basis of visits to 30 of 250 BIA schools educating over 20 percent of the BIA student population, it can be concluded that most BIA schools are no better or worse than the average American rural and small-town elementary and high schools.

However, research has shown that out-of-school learning, in the home and among peers, contributes a major component of childrens' education. In this respect, BIA schools do not now have it in their power to offer the out-of-school educational advantages enjoyed by two-thirds of the non-Indian students whose families are not impoverished. Indian homes where an Indian language is spoken obviously do not reinforce the English language learning of the schools. For boarding school students, the dormitories do not offer the same environmental enrichment of most homes.

Thus to achieve equality of educational processes, once again the BIA school process must be much better than average, to compensate for the much less than average out-of-school educational factors operating during the school years. Unfortunately the BIA schools cannot be said to be much better than average, so that an overall inequality of educational process exists, much as an inequality of educational inputs.

If equality of educational opportunity is defined as equality of educational outputs, then there is also great inequality at present, although the inequality is steadily being decreased by BIA schools. On the average, Indian students are over two years behind their non-Indian peers in academic achievement, have twice the drop-out rate, and enter and graduate from college in much smaller percentages.

Most BIA administrators and teachers, Indian students and parents, and education system analysts define educational goals in terms of outputs. The goals of equality of educational opportunity are thus defined as the achievement of a proportion of Indian high school and college graduates equal to that of non-Indians.

Unfortunately this goal is insufficiently specified to provide a firm basis for policy decisions. Since equality of average Indian educational attainments is not a present reality, its achievement must occur over some period of time, during which the gap between Indian and non-Indian educational attainments is gradually narrowed until it disappears. This period of time over which Indian equality of educational opportunity is achieved, which may be called the 'gap period,' is never specified. Most of the participants in Indian education are agreed that the gap must be closed but there has been little discussion of the schedule.*

***

The actual operations of BIA schools were observed in 30 schools on 6 reservations and Alaska and Oklahoma. The schools were selected to form a representative sample, on the basis of a typology of such characteristics as size, location, and student population (tribal mix and composition). Principals, department heads, teachers, dormitory staff, students, Indian community representatives, and Indian parents were interviewed both formally and informally. Classrooms, dormitories, dining facilities, and extra-curricular activities were observed in operation by social scientists and educators who had been provided with 'observation guides' or checklists. Observations were recorded, condensed, summarized, and compared by the analysts to provide a consolidated status summary to compare with the educational objectives.

An analysis of the current status of BIA schools was conducted to determine the discrepancies with educational objectives, and the factors critical to the achievement of these objectives. The principal discrepancies between goals and current status were in the below-U.S. average educational achievements of most BIA school students, the lack of a sufficiently enriching extra-curricular environment particularly in the boarding schools, the lack of sufficient on-reservation employment opportunities to motivate job-directed education, and lack of sufficient local community skill and initiative to participate actively in the direction and operation of the schools.

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* One notable exception has been the statement by L. Madison Coombs, Director of Research and Evaluation at the BIA Division of Education, to the effect that there should be "an acceleration of the educational growth curve for Indians (doubling?) which will expedite accomplishment of the following objectives: (1) high school graduation by virtually all Indian youth, and (2) continued education beyond high school (either college or vocational-technical for all who desire it." Memo May 17, 1968, to Assistant Commissioner Zellers.

The factors critical to the improvement of educational achievement were determined to be the quality and quantity of instruction, major environmental factors such as dormitory life, and the student-perceived opportunities for applying their education to the attainment of economic, social, and political objectives.

The quality of instruction was found to be most strongly related to the overall educational leadership of the schools; the quality of teacher recruitment, selection, in-service training, and supervision; and the relevance, motivational effectiveness, and intellectual quality of curriculum materials.

The quality of non-classroom environmental factors, particularly dormitories, was found to be dependent chiefly on the quality of dormitory guidance, counseling, and other staff; the reasonableness and sensitivity to normal youthful needs of the school regulations; and the quality and quantity of physical facilities.

The student-perceived opportunities for applying their education to the achievement of their own goals - a critical factor in students' perception of the relevance of any education - seems to be most dependent on employment opportunities on or near the reservation.

The principal obstacles to the achievement of the educational goals were determined to be cultural and geographic isolation, rural poverty, inadequate instruction and counseling for bridging the cultural gaps, and problems of school management and administration.

The BIA education system can itself do little to remove the cultural and geographic isolation of most Indian homes and the rural poverty in which they subsist. It can take steps, however, with the approval of the Commissioner of Indian Affairs and the Secretary of the Interior, to improve instruction and counseling from its present average performance to the superior performance required to overcome the Indian children's environmental handicaps in the achievement of educational equality. The BIA and the Department of the Interior can also take steps to reform the presently confused administrative chain of command of BIA schools that reduces the effectiveness of their management.

The system analysis phases produced the identification of objectives, the factors critical to their attainment, and the major problems to be solved in achieving the objectives. The system analysis thus prepared the requirements for, and some of the key variables of, both programs formulation and cost-effectiveness models development. The programs were then designed to be responsive to the specific problems (goal-reality discrepancies) identified. The models were then designed also to deal with the most critical problems, and on the basis of additional information concerning the critical factors in effectiveness.

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The programs formulation phase of the project overlapped with the end of the system analysis phase. With the latter's identification of critical problem areas and variables, programs could be generated to respond specifically. The typical program generation process consisted of this sequence:

- problem definition (from the system analysis)
- identification of key variables or factors
- generation of alternative combinations of the key variables to suggest new programs
- literature search for possibly relevant similar programs
- evaluation of alternative combinations of variables for their relevance and apparent effectiveness in responding to the problem posed
- selection of most relevant programs for more detailed consideration
- design of pilot programs to test the fully operational program
- estimation of the startup and annual operating costs of pilot and fully operational programs.

Some 150 programs were formulated. Mixes of programs to satisfy several degrees of budget constraint were composed for several budget options: No added expenditure beyond the present BIA education budget, $10 million additional, $50 million additional, and $100 million additional.

The relative cost-effectiveness of the programs was estimated on the basis of their relevance to the identified problems, the degree of their effectiveness, the probability of this effectiveness based on the result of similar programs, and their costs. Programs were then listed in descending order of their relative cost-effectiveness.

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The cost-effectiveness modeling phase was intended initially to produce a single massive education system cost-effectiveness model. In the course of the system analysis it soon became apparent, however, that a set of several more specifically directed long-range planning and operations analysis models would be more relevant to the needs of the BIA users. These would permit modular implementation at appropriate levels and for appropriate planning functions, without requiring that a massive monolithic model be implemented with computer assistance before anyone obtained any evaluation and planning utility.

Twelve distinct models were designed to deal with specific school system planning, school management, and instructional problems. All the models are operable on a manual, human calculation basis. They are also ready for computer programming and operation, should high-volume, repetitive use justify this. At the system level, the eight models developed were:

1. Population and Enrollment Projection Model
2. Facilities Use and Planning Model
3. Economic Projection Model
4. Equipment Projection Model
5. Personnel Projection Model
6. Facilities Location Model
7. Finance Management Information System Model
8. School Investment Model

At the school level, four models were designed for local implementation by principals and teachers. These were:

1. School Model
2. Instructional Process Model
3. Teacher Evaluation Model
4. Curriculum Evaluation Model

Chapter II. Goals of Indian Education

The realities of technological, economic, political and socio-cultural changes require any education system continually to adapt to new needs and constraints in order to be effective. This responsiveness to reality requires information about what is desirable and what is possible. The policy of a rational organization is based on maximizing the realization of objectives within the constraints of money, time, personnel, and other resources--that is, on maximizing the desirable within the possible. Appropriate, carefully defined educational objectives are thus the prerequisite for rational planning of policies, programs and budgets of an educational system.

The educational objectives of the key actors in an education system constrain what is possible, as they will tend to behave in ways consonant with their own goals. Compelling behavior in conflict with personal goals entails economic, psychological, and political costs. Rational education system planning therefore requires information on the educational objectives of all key actors, including administrators, teachers, students, and parents. In some cases, a policy or program may be worth the cost of conflict with the objectives of one or more of these groups of actors; such costs must, however, be justified by the expectation of the fulfillment of higher overall objectives.

In a less direct, but still significant, sense, the educational objectives of the key actors in the system tend to reflect their expectations of results of the educational process. These expectations strongly influence the results. Educational research has shown that the teacher's expectations of students are closely related to students' achievement. When teachers expect failure, students tend to fail. The converse also appears to hold, as demonstrated by a psychological experiment in the "self-fulfilling prophecy" (Scientific American, November 1967, pp. 34-44).[1] Children were randomly divided into two groups. The teacher of one group was told that the children were"likely to show unusual intellectual gains;" these children showed a mean achievement gain of about 50 percent more than the control group.

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[1] See also Robert Rosenthal and Lenore Jacobson, Pygmalion in the Classroom: Teacher Expectation and Pupils' Intellectual Development, New York: Holt, Rinehart and Winston, Inc., 1968.

The educational objectives of students and teachers are important information for program planning because they indicate what sorts of programs are likely to work. Students and teachers are most willing to learn what interests them. Assuming there is considerable transferability between one set of things learned and many others, it may be that the best way to maximize learning is to emphasize subjects of interest to the learner. This is not quite a tautology; we are not talking merely of arousing the learner's interest in a subject otherwise uninteresting to him, but of sustaining it by tailoring the entire content to his interests. This "consumer orientation," an attempt to maximize motivation, requires information on the objectives of both students and teachers.

In a cross-cultural education system, such as that administered by the Bureau of Indian Affairs, the determination of the educational objectives of parents, students, teachers, and administrators assumes added importance, as these key actors are sometimes involved in cultural conflicts critically affecting the results of the education process. For example, there is sometimes a conflict of objectives between Indian parents who want their children to return home to work after finishing high school, and the students, who often want to leave the reservation. There are subtle cultural conflicts between students and teachers over what constitutes acceptable behavior and language. The nature of such conflicts can often be determined by observation and comparison of the education objectives of the protagonists. To deal with such conflicts constructively, it is essential to determine the conflicts of objectives which create them, and the areas of agreement on objectives which can provide a basis for resolving the conflicts.

The determination of the educational objectives of the principal participants in the education system is also essential for coordination with national policy. If significant conflicts of objectives are found, then the requirements of national policy must either be conveyed to the participants in the system or modified to conform to their preferences. Even if national and local educational objectives cannot be reconciled, it is important for the system's administrators to be aware of the goal conflict, so that they may plan their policies and programs accordingly.

Finally, any measurement of education efficiency must be made in terms of some criteria of effectiveness. Educational effectiveness is not an abstraction, but rather a measure of the degree to which the objectives of one person, or group of persons, are being achieved. The identification of the objectives of the key participants in an educational system is, therefore, essential to the formulation of measures of effectiveness, which in turn are essential to the estimation of the cost-effectiveness, or efficiency, of systems and programs. These estimations of cost-effectiveness are in turn necessary for the design of optimal policies and programs.

In summary, then, it is important to determine the educational objectives of the principal participants in the education system--the administrators, teachers, students, and parents--for six major reasons:

1. Forecasting of education requirements;
2. Coordination of national and local policy;
3. Identification of behavioral constraints, expectations tending to be self-fulfilling, and cross-cultural conflicts and consonances;
4. Education system analysis and measurement of the cost-effectiveness of schools and programs;
5. Prediction of the feasibility and probable effectiveness of alternative policies and programs;
6. Planning of programs and budgets.

Because of the importance of information about educational objectives, four independent methods were used to determine the objectives of the administrators, teachers, students, and parents in BIA schools: personal interviews, a projective school planning simulation (EDPLAN), classroom observations, and literature search. In addition, statements of educational goals for BIA schools were solicited and received from the branch and section chiefs of BIA Division of Education's Central Office.

A carefully prepared interview guide was used by all field interviewers to assure uniformity of questions. The setting for the interview was usually a private school office or a quiet and isolated section of the school library, dorm, or cafeteria. Interviews with teachers and students generally took from 15 to 60 minutes; half an hour was average. Interviews with administrators generally lasted between one and three hours; an hour and a half was the average.

The student interviews concentrated on educational and post-educational aspirations and expectations. Specific questions were directed at the amount and type of education desired, occupational goals, and the relevance of schooling to these occupational goals.

The EDPLAN school planning simulation was the second method used to determine educational objectives, primarily of teachers and students (only a few parents and administrators participated). EDPLAN is a simulation game, in which three competing teams first weight their educational goals for a hypothetical school; then allocate a budget to several programs designed to achievetheir goals; and finally, evaluate and score the other team's goals. The game was usally played by three teams of five players each, in the school library, cafeteria, or a classroom. The average playing time was an hour and a half.

At the end of each EDPLAN simulation, the planning sheets were collected, and the choices of players concerning educational priorities were recorded. Observation, films, and tape recordings of many of the likely discussions among the players provided useful, albeit unstandardized, data for determining the educational objectives of teachers and students.

The roughly 200 classroom observations constitute only an indirect means of determining educational goals; in the case of teachers, it is probably indicative. On the assumption that the formal classroom process is controlled principally by the teacher, it is possible to infer some of the educational objectives of the teachers from the relative importance they place on different subject areas and means of instruction.

Summary of Findings about Educational Objectives

Indian students want to go to college; three-quarters of them said so specifically. About one-third want to attend a two-year or technical college; the rest want to attend a regular four-year college. When asked about their conceptions of college, most students appeared to have a reasonable understanding of what was involved. A small fraction (3 percent) desired graduate studies at the masters or doctoral level. Fewer than 18 percent of the students wanted no further education beyond high school.

The EDPLAN results confirm this evidence of the high value placed on the objective of college education; less emphasis is placed on job training. Both the interviews and the simulations showed that the students desire a firm grounding in the core subjects of English, mathematics, and science. The students are divided on the issue of Indian culture and language. Some regard it as an education objective, while others do not; it is, surprisingly, an issue of little importance to most students.

Teachers in BIA schools, on the other hand, do not appear to consider academic achievement nearly so important as do their students. When asked to name "the most important things the school should do for the students," only about one-tenth of the teachers mentioned academic achievement as an important goal. In both the interviews and the EDPLAN simulation, the teachers stressed the educational objectives of personality development, socialization, and "citizenship." It seems clear that the teachers have as their principal education objectives the socialization and cultural adaptation of their students, rather than their academic preparation and development. Teachers', like students, are divided on the issue of Indian culture; most of them tend to regard it as either a minor objective or a threat to acculturation.

Administrators in the field generally responded similarly to teachers. This is not surprising, since all of them were formerly teachers, most quite recently. Only one administrator of the 35 interviewed was concerned primarily with the academic achievement of the students. The administrators do not generally express any need for a more intellectually challenging curriculum or for college preparation. They are more interested in running the school efficiently and offering an orderly, socially supportive program of general education combined with vocational, job-oriented training. In this respect, they are more economically aware and output-oriented than the majority of the teachers.

The educational objectives of elementary school administrators also emphasize the school's role in fostering the students' physical and emotional well being. Their concern is to compensate for what they believe to be the physical and emotional impoverishment of Indian children.

Parents of Indian students stand somewhere between the students, on the one hand, and the teachers and administrators, on the other, in their educational objectives for their children. They are divided between those who, like the majority of the students, desire a college education, and those who, like most teachers and administrators, believe that high school and/or vocational training is sufficient. The Indian parents see education as instrumental to job placement and success. Thus the issue of whether or not to teach Indian language in the schools is resolved on the basis of employment expectations; if there are few jobs available on the reservation. English language training is stressed as an objective, as Indian language training is regarded as useless for jobs off the reservation. On the other hand, where jobs are available on the reservation, as on the Navajo reservation, Indian language and culture are considered to be important educational objectives, as they are economically feasible.

The senior staff of the BIA Division of Education's Central Office expressed their objectives for Indian education in more system-wide terms. A consensus exists favoring equality of educational opportunity for Indians, defined variously in the input terms of "quality education of a par with or better than that provided in the State's public schools" or "an education at least equal to that provided all other students, " or the process terms of completion of "the number of years of schooling comparable to the National norm, " or the output terms of"age-grade level by grade or group comparable to the national norm" or "high school graduation by virtually all Indian youth. "

It should be noted that equality of educational school input ("equal quality education") cannot achieve equality of educational output (equal age-grade and achievement levels) because of the environmental handicap that constitutes the extra-school inputs to the educational process. It is unclear whether the BIA staff favoring equality of input are aware that this assures inequality of output, but probably they are confusing the two. Personal discussions suggest that they actually favor equality of output even when they call for equality of input.

In addition to equality of Indian educational achievement with U.S. norms, the Central Office senior staff favored college education for all Indian students "who can achieve it","all who desire it", those who are eligible, or "all those who qualify"! This objective is given roughly the same priority as job training for economic self-sufficiency at an average income level equal to the national average. In addition, an important objective is professional-level education. Development of positive student self-image and emotional maturity were additional secondary objectives.

Analysts carrying out this study of Indian education inevitably found themselves developing their own educational objectives. These tended to agree with the views expressed by most of the students and Central Office staff that a college education was occupationally and culturally desirable, and feasible for most students, and that the Indian language and culture issue was much less urgent than the development of the reservations to provide upward mobile jobs to educated Indians. The analysts also tended to agree with the students that what they needed most from the schools was strong intellectual development, rather than the "character development" and "citizenship training" stressed by many teachers.

Some of the more activist Indian groups, such as the Coalition of American Indian Citizens, express their objectives for Indian education in control or process terms. For example, the Coalition of American Indian Citizens in a statement presented at the Poor People's Campaign in 1968, made the following demands:

> "We demand the Bureau of Indian Affairs contract directly to Indian communities, and not tribes, for the operation of schools.
>
> We demand that the Bureau of Indian Affairs assist in establishing an agency outside of the federal government to provide educational services for these communities.
>
> We demand that college scholarship grants and awards be handled outside of the federal government.
>
> We demand that the Indian boarding schools be thoroughly investigated by committees of Indian poor people.
>
> We demand that Alaskan Natives and tribes in the "lower 48" have their children educated in their respective states and near their homes.
>
> We demand bi-cultural education be the framework of all Indian education; the token recognition it is now being given is not enough and it only teases Indian children and families. Many programs, such as bi-lingual training, courses in Indian history, culture and languages are important. Too often white people and white

Indians run these programs for Indian communities."

~~The statement concluded with the comment that~~ "With very few exceptions, Indian people still have no real voice or control in the education of ~~their~~ children."
This concern is shared by many BIA Central Office staff and educational consultants, but not by most teachers in the field. Nor does this appear to be a salient issue for most Indian students, although this situation could change rapidly.

The analysts tended to agree with those Indian leaders who argue that education can achieve both the maintenance of cultural identity and the development of employable skills at all levels through a more intellectually demanding and relevant curriculum.

Community and parental involvement in the schools seems to be an educational objective chiefly of Indian political leaders, BIA field administrators, and analysts. Many students are apparently uncertain or ambivalent in this regard; although some of the better teachers desire it, most are not concerned. The parents are also not generally interested; it is unclear whether this is the result of a genuine lack of interest or of unawareness of the possibility of involvement in the school.

Interpretation of the Findings about Education Objectives

The broadest areas of agreement among all the groups concerned were the objectives of more and better education and of education to increase the student's employability. Job preparation was rated an important, although secondary, objective by Indian students, teachers, administrators, and parents; students thought it more important than did most teachers. Considerable agreement also existed among students, teachers, and administrators concerning the objective of integration of Indian students with other tribes and other races; this, the objective rated second in importance by teachers, was, however, only fifth in importance to students.

There were two similar divisions in opinion between students on the one hand, and teachers and administrators, on the other, concerning the objective of maintaining Indian culture. In both groups the majority felt that cultural preservation was an educational objective of low priority, while a minority asserted its importance. Teachers declared the teaching of

Indian culture to be more important than did Indian students. Development of the reservation and of the local community was an objective of slight importance to both teachers and students. There, the similarities among the education objectives of the four groups end.

The most striking conflicts of education objectives are those between Indian students, BIA Central Office senior staff, and educational consultants on the one hand, and teachers, on the other, as to the desirability of college education. Not only did most students consider college preparation the primary objective, but some also considered graduate education for the professions a major objective. The majority of the teachers not only did not consider college preparation the primary objective, but almost totally rejected graduate education as a goal. Clearly, the students have much higher educational aspirations for themselves than those thought appropriate for them by their teachers, and the BIA Central Office staff agree with the students.

A complementary disagreement concerning educational objectives exists between students and teachers concerning the value of socialization, "emotional maturity," "development of improved self-image," and "citizenship." This area of essentially non-academic and non-intellectual student behavior is, apparently viewed, very differently by students and teachers. The students usually assigned the lowest priority to these objectives, while they are by far the foremost educational objectives of the teachers. The BIA Central Office staff assumed an intermediate, mixed position on this issue.

This suggests an important conflict in the students' and teachers' views of the role of the teacher. Many of the teachers apparently still see their role as that of "socializing" or even sometimes "civilizing." The students, on the other hand, believe that teachers should be supplying them with the intellectual tools for advancement. Perhaps even more important, it suggests that most teachers are either ignorant of or skeptical of the desire for higher education felt by most Indian students.

Viewing the relative importance attached to various educational objectives by teacher and student groups as a whole, there are some remarkable and probably counterproductive contrasts. Most teachers seem to feel that the principal need of the Indian student is for emotional and social development, despite the severe achievement lag (an average of three grade levels behind whites of the same age) of Indian students. One or both of two explanations seems likely: either the teachers believe that there is no real need for the Indian student to achieve intellectually, or think that emotional development (the formation of a positive self-image) is the precondition for intellectual development.

The former belief is unresponsive to Indian student aspirations, and obsolete socially and economically; it borders on being benevolently patronizing. It is a view that can, however, be understood in the context of those reservations (of which there are too many) where education buys nothing in social or economic advancement, because there are no employment opportunities which require it.

The latter belief, that positive self-image is a precondition for the intellectual development, is probably partly correct, at least in theory. However, there is no reason to assume that Indian students' failure to achieve academic success is the result of a lack of positive self-image; it may be explained equally well by an insufficiency of effective instruction.

The analysts found, from their observation of over 100 classes, that the quality of instruction was rarely so unusually high as to motivate students already hampered by environmental handicaps and the cross-cultural gap. Furthermore, the attribution of academic failure to a "lack of a positive self-image" suggests a possible misconception of the average Indian student's state of emotional maturity, and of its forms of expression. For example, Indian students often speak very softly, and tend to avoid looking people directly in the eye. These traits are perhaps indicative, among white students, of a lack of self-confidence and of a poor self-image, but are cultural customs to which even the most mature and self-confident Indian students subscribe.

This is not to argue that Indian students are either more or less mature than their non-Indian contemporaries; such a conclusion must await more detailed psycho-social analysis. It is necessary, however, to point out that there are more plausible explanations of low academic achievement, of which the most notable are environmental handicaps and insufficient instruction to overcome them. The highest priority must be attached to correcting these impediments to educational success. It must also be noted that few social scientists who have observed Indian students in classrooms, playing fields, and dormitories can fail to observe their general cheerfulness, good nature, and dignity, none of which are indications of a "negative self-image." Perhaps what many teachers are saying indirectly is that many Indian students have a negative image of their teachers.

The typical Indian student, on the other hand, appears to have a sound and realistic view of what he wants and what he needs to reach his goals. He wants employment with opportunities for economic and social advancement, and he knows that academic achievement is an effective means to this end. The educational objective of highest priority is college preparation, followed by occupational preparation and advanced post-graduate professional education. The average student wants the reservations to be developed, and is sometimes also interested in integration with the dominant culture. He places a modest emphasis on school social life, and the lowest priority on "maturity" and a "positive self-image." He impresses the observer as, on the whole, mature, needing increased intellectual stimulation and improved instruction much more than emotional guidance.

These hypotheses tend to be supported by differences between students' and teachers' preferences in educational programs. Major disagreements occurred on the priorities accorded vocational training and field trips. The students felt that field trips were highly desirable, while most teachers placed low priority on them. Students placed a low priority on vocational training, which many teachers consider subordinate in importance only to the recruitment of more teachers. Many teachers believe in a quite obsolete form of occupational preparation, for which students show commendably little enthusiasm.

In summary, the students have higher educational objectives than those of most of their teachers. The BIA Central Office senior staff tend to have views closer to those of the students and the educational analysts, than to those of the average teachers--testifying to the Central Offices' relative lack of direct influence over the teachers. The attitudes and corresponding instructional activities of the majority of the teachers are thus often ineffective in helping Indian students to achieve their educational objectives. There are, of course many exceptions to this generalization. On the whole, however, teachers are unable either to overcome their students environmental handicaps effectively or to communicate effectively with them as individuals.

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Comparison of Educational Objectives and Current Realities

The broadly agreed-on objective of equality of educational opportunity, in terms of the output measure of equality of educational achievement, has not been achieved yet. The average number of years of schooling of Indians is only some 8 years,[1] compared to 10.6[2] years for average U.S. non-Indians. There are an estimated 42% of all BIA students that are over-age in their grades[3], compared to less than 20% of the U. S. non-Indian school population. The average academic achievement level of Indian children is some two years behind that of their non-Indian age peers.

Only some 60% of BIA high school students graduate[4], compared to 78% for the U. S. non-Indian high school population.[5] Only some 13% of BIA students enter college[6], compared to about 50% of non-Indian students.[7] Of those few Indian students entering college (some 300 in 1967), only about 3% graduate (about 9 in 1967)[8]. This compares unfavorably with the 32% of non-Indian college entrants who graduate.[9] Less than 1% of Indian graduate students complete masters' degrees,[10] compared to 8% of non-Indian students.[11]

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[1] 1960 Census

[2] Statistical Abstract, 1967, based on 1960 Census

[3] BIA Annual School Attendance Reports for 1967

[4] BIA Enrollment and Dropout Data, 1967

[5] NEA Statistics, "Ranking of the States, 1968"

[6] BIA, 1967 Summary Placement Reports on Graduates(278 of 2098 high school graduates went to college)

[7] Statistical Abstract, 1967

[8] BIA College Enrollment and Graduation Rate

[9] Statistical Abstract, 1967

[10] Based on BIA data on college entrance and graduation, optimistically assuming the same rate of graduate school completion for Indians as for the non-Indian population.

[11] Statistical Abstract, 1967

Recommended Educational Objectives

The goal of equality of educational opportunity is not a present reality. Since the achievement of this objective must occur over some period of time, this interval must be a part of any statement of educational objectives.

The time interval over which the goal of equality of educational opportunity (e. g. equality of achievement) is to be attained may be determined by a variety of approaches. It may be based on the present rate of progress in closing the gap between Indian and non-Indian students, at which rate the time target will probably not be in this century. Alternatively, it may be based on the desires of the more ambitious Indian leaders, which would involve removing all resource constraints and closing the gap within the school attendance period of most BIA students. In the case of high school students entering their senior class, this means a minimum gap-closing period of one year.

The latter objective, on superficial examination, may seem extreme. Yet clearly if it were feasible, it would be most desirable. Is it feasible? It is the considered opinion of the analysts that it is feasible.

Assuming that the average BIA high school senior is two years behind his non-Indian age peer in academic achievement, equality of educational achievement requires that three years of academic achievement be accomplished by BIA schools in one year for seniors, two years per year for juniors, 1-2/3 years per year for sophomores, and 1-1/2 years per year for high school freshmen.

Evidence exists for the feasibility of this accelerated rate of educational achievement in a variety of Upward Bound and compensatory education programs. Achievement gains of two years per year are common. Even if the doubled rate is assumed to be the maximum practical, then it could take only two years to bring BIA students up to the national achievement average. Assuming that it would require an additional year for planning and developing the details of the acceleration process, a total of three years would appear to be the feasible minimum time interval for equality of Indian educational achievement to be reached.

Great economic, social, and political costs of inequality of educational opportunity for all Americans, as well as for Indians in particular, are incurred every year that the goal is not achieved. Some of these costs are irretrievable in human terms. It is therefore recommended that these costs be minimized by proceeding with the achievement of educational equality at the maximum feasible rate, or over a three-year performance period.

The programs described in the following chapters are believed to be capable of making substantial and decisive contributions to the achievement of this goal.

American Indian Community Control of Schools

In the American Indian communities, living mostly in rural poverty on reservations in remote plains and western desert regions, have shown increasing interest in controlling their own schools.

The issue of community control of schools in rural on-or near-reservation Indian communities involves at least the following considerations:

1. Overall local community recognition of the general importance of education in leading to better economic opportunities;

2. Varying degrees and kinds of local community dissatisfaction with the present state of the schools, usually including complaints concerning instruction, prejudice on the part of teachers, inadequate guidance and counseling, insufficient relevance of the curriculum to social and economic needs, and inadequate facilities;

3. Local community leaderships' desire to control schools' staffing, administration, and curriculum content;

4. Local community economic inability to operate adequate schools without external financial support, and usually a clear recognition of this fact by the community;

5. Local community needs and desires for federal financial support of schools under preferably local community control, or at least federal control, but least desirably under local non-community control (e. g., by a prejudiced local majority or minority).

In sum, impoverished rural American Indian communities have a desire for better education for their children, are dissatisfied with the present quality of education, want more control over their children's schools, cannot afford to pay for their own schools, and need Federal support for their schools preferably under local control.

The geographic isolation and dispersion of the rural Indian school population, and its cultural isolation, pose unique education and community control problems. Cultural isolation of rural Indian communities, and the relatively greater acculturation of Indian children who have more years in school than most of their parents, has resulted in generational conflict. Rural Indian parents typically have only an elementary school education, and are often unaware of the educational options available and their respective requirements. Some Indian parents are also concerned about education at boarding schools resulting in children not returning to the reservation.

The Bureau of Indian Affairs boarding schools on and near reservations are made necessary by the geographic dispersion of most rural Indian groups. They are the only immediate practical alternative to scattered one-room schools operating at an inefficient scale and lacking diversified curricula. These boarding schools account for some 35,000 of the approximately 55,000 students enrolled in BIA schools. Even when located on reservations, their parent constituencies live in widely dispersed communities and only the reservation tribal governments offer a political basis for anything like community control.

Where boarding schools are located off the reservations, as is frequently the case their parent constituencies are dispersed over most of the continental United States, and a national-level Indian organization would have to be the basis for "community" control. At this point the very concept of community control is eroded to an ethnic community alone, and an extremely diversified one at that. (There are some 200 American Indian tribal groups speaking almost as many mutually incomprehensible languages.)

The issue of Indian community control of schools is more immediate in the case of the approximately 20,000 Indian students enrolled in on-reservation day schools and those several thousand others enrolled in boarding schools within a few hours' convenient travel of their homes. In these cases a community of parents does exist that is at least geographically capable of controlling the schools.

Several BIA schools are now controlled to at least some degree by community school boards--notably the Rough Rock Demonstration School in Arizona. Some of the arguments for local control have included:

1. Increased parental involvement, with consequent positive attitudes toward the school and hoped-for improvement in student achievement;

2. Increased school administration responsiveness to student and community needs, hopefully resulting in more effective education and better student achievement;

3. Increased respect for students and parents, resulting in more positive student self-image, more parent support of school, and ultimately better student achievement.

The hoped-for short-range results of increased parental involvement and increased respect for students and parents are apparent at the Rough Rock School, although these results cannot reliably be attributed to the Indian school board alone. Other BIA school boards, such as the Turtle Mountain Community School, have not shown any significant increase in parental involvement. The Rough Rock School's specific program for involving parents is probably more responsible for parental involvement than is the fact that the school board is composed of local Indian community people.

Responsiveness to student and community needs is difficult to assess because these needs are a matter of dispute. The Rough Rock School, for example, uses a bicultural program of instruction in both Navaho and English languages. Some educators--both Indian and non-Indian--believe that bilingual instruction offers more efficient English language learning while also promoting student self-confidence and a positive sense of identity. Other educators--both Indian and non-Indian--believe that the bilingual, bicultural approach wastes time that could be spent more usefully on learning core subjects.

The hoped-for long-range results of increased parental involvement allegedly related to school board control--student achievement--is not yet apparent. Students at the Rough Rock School achieve only comparable scores on standardized tests to those of Indian students at other nearby BIA schools, such as nearby Rock Point, not controlled by Indian school boards. The results may be longer in coming, since the students are all still at the elementary level, but no significant difference in achievement gains has yet been demonstrated.

The absence of conclusive evidence that local Indian community control of the schools results in higher student achievement is not an argument against such control. There are other arguments for community control that do not depend on direct increases in student achievement. These other arguments will have to overcome several objections to Indian community control of the schools, however. These objections to Indian community control are rarely made explicit for obvious reasons of political caution, but they are essentially the following:

1. Lack of sufficient education and expertise in available school board members for knowledgeable decision-making.

2. Community factionalism, leading to improper use of school board authority.

3. Cultural chauvinism and ethnocentrism, leading to further cultural isolation from mainstream American and probably reduction of economic opportunities.

These objections, whatever their validity, do not appear to outweigh the desirable aspects of Indian community control of schools, but they do suggest issues that must be dealt with. The lack of sufficient education in available school board members is not limited to minority groups. It can be dealt with by adult education programs to remove these limitations.

Factionalism also is hardly limited to minority communities, and if this objection were to be decisive most legislative organizations would have to be abrogated.

Minority ethnocentrism is a modest risk, and possibly a healthy counter-force to the previous generations of majority ethnocentrism, that resulted in poor self-image and lack of confidence on the part of minority group students. In any case, ethnocentrism is limited to biculturalism at even the most fervently Indian-run schools, which is much less ethnocentric than the usual mainstream-culture-only approach. There seems little to fear, and some positive pride and identity to gain, in this most mild ethnicity of biculturalism.

In conclusion, it would seem that neither the conventional arguments for or against Indain community control of schools are entirely valid or persuasive. The more important issue is probably that of political equity. American Indians have the right to control their own schools as much as any other American community. If they wish to exercise that right, the government should give them every support in doing so.

It is recommended that any Indian community that wishes to elect its own school board be helped to do so, and that adult education be made available at Federal expense to all candidates, so that there will be a useful exercising of serious educational issues. On the other hand, in those Indian communities that do not have the desire or interest to run their own schools, there should not be any slavishly doctrinaire forcing of such control on the local community. Community control of schools should be easily implemented, but also voluntary.

Chapter III. Programs

The superior quality of education required to achieve the widely agreed-on goal of equality of Indian educational achievement in the face of the severe environmental handicaps cannot be obtained cheaply. Put very simply, the goal of equality of Indian educational opportunity cannot be achieved within the near future within current BIA education budgets.

More funds alone are also not enough. 'More of the same' average quality education that is now offered in BIA schools is also unlikely to gain the goal of equal educational opportunity in the near future. What is needed is:

- more money
- more innovation, and
- more effective management

More innovation and more effective management can stretch current resources, but are unlikely to gain the goal in the near future as is more money. Neither more money nor improved operations and management alone will achieve the goal - both are needed.

The boarding schools are inadequately provided with staff and funds. This insufficiency tends to cause teachers, administrators, counselors, and staff members to be overworked, and therefore insufficiently attentive to students' needs. In addition, it generates frustration in some personnel, and a tendency to blame inadequacies on "the system" in others. In the boarding schools, the result is a barren and "institutional" atmosphere, injurious to the students' development. The funds allotted to BIA schools should be increased greatly.

As a stopgap until funding can be increased, a substantial number of zero-cost programs and management improvements are proposed. These and low-cost programs are listed below.

This chapter presents a summary of the substantive programs developed to respond to the goals of Indian education and the problems of its present state. In addition, brief descriptions of long-range planning and school models, more fully described in Volumes III and IV of this report, are included. The programs fall into three broad categories:

Instruction and Counseling; Administration and Management; and Integration of Economic and Educational Development. It will be noted that in some respects, the three areas overlap. Inadequacies of instruction, for example, are closely related to problems of management and administration, which in turn are a function of the lack of integration between educational and economic development. The complexity and interrelation of the issues necessitates remedial action in all areas, if more than superficial improvements in any area are to be achieved.

A list of suggested programs follows the general recommendations. Programs are listed in descending order of their relative cost-effectiveness index values. The total annual cost of the full implementation of each program is also provided. It should be stressed that the analysts do not recommend that every program listed be put into effect. Certain critical programs, such as those dealing with the development of new curricula, receive a low cost-effectiveness rating, owing to their high cost. Other programs, although less essential, receive high cost-effectiveness ratings because of their low overall cost. The purpose of the computation of program cost-effectiveness is not to assign specific priorities, but rather to provide data to assist planners in deciding the relative efficiency of programs considered to be of comparable utility.

Detailed descriptions of the programs, and a breakdown of their costs, appear in Appendix B. Sample mixes of programs, designed to take into account a wide range of problem areas, appear in Volume III, Chapter XI; these include mixes appropriate to each of various funding levels ($0, $10,000,000 additional; $50,000,000 additional; and $100,000,000 additional).

Instruction and Counseling

The primary in-school cause of the low academic achievement levels of Indian students is the inadequacy of the instruction offered them for overcoming their severe environmental handicaps. A great proportion of the teachers in the BIA system lack the training necessary to teach pupils with the linguistic and economic disadvantages of the Indian child successfully. Only a handful of the Bureau's teachers are themselves Indians, although some bilingual Indian teaching aides are employed. Virtually no non-Indian teachers learn to speak an Indian language, nor are they given formal help to do so. Many tend to take little interest in intellectual and artistic achievement, and therefore fail to stimulate the development of intellectual curiosity and creativity in their pupils.

The curricula used in Bureau schools are generally inappropriate to the experience and needs of the students. Those for teaching linguistic skills are particularly unsuitable, as they fail to respond to the Indian child's unique language problems. Vocational training courses bear little relation to existing job markets. The teaching techniques commonly employed force upon Indian students a competition alien to their upbringing. The highly structured instruction characteristic of Bureau schools is usually not sufficiently flexible to deal with the special problems created by the differences between the cultures of student and teacher. Equipment and facilities are sometimes inadequate, particularly in smaller day schools, but this constitutes a relatively minor problem. More distressing is many teachers' tendency to blame instructional inadequacies on a lack of facilities and equipment, and to fail to use those provided to their full capacity.

The counseling services offered Indian students are gravely inadequate. There are too few counselors to accommodate the students' needs, and few counselors possess the training required for their position. Vocational counseling is rare, and psychological assistance almost non-existent. Little coordination takes place between teachers and counselors.

In the boarding schools, the dormitories in general satisfy the students' physical needs, but are barren and impersonal. The food served, while nutritious, is deficient in flavor and variety. Students are provided with insufficient extra-curricular activities, and become bored and restless, particularly on weekends. Excessively rigid and confining regulations, inappropriate to students' ages, are strictly enforced.

To improve the quality of instruction and counseling in BIA schools, a series of policies and programs are recommended. The recruitment of new teachers, especially Indians and native Alaskans, should be intensified, and the standards for acceptance of applicants raised. The number of Indian teaching aides should be greatly increased. Sensitivity training should be instituted both for newly hired teachers and for those already in the employ of the BIA. Where applicable, such training should include elementary instruction in the language of the teacher's students, as well as in the characteristics of their culture. Both teachers and administrators should receive continuing in-service training in the employment of techniques to realize most fully the intellectual potential of their students, as well as in their own particular fields of study.

New curricula should be developed where existing available materials do not permit effective instruction, and vocational course offerings geared closely to the current job market. Where new equipment is needed, it should be purchased, and teachers and aides trained in its use. The number of academic, vocational, and psychological guidance counselors should be increased fourfold, and systematic procedures for consultation between teachers and counselors established.

In the dormitories, students should be encouraged to employ their creativity in offsetting the institutional quality of their quarters. New buildings should be so designed as to allow students a modicum of privacy. Partial authority to establish and enforce rules of behavior should be entrusted to students. The variety, quantity, and quality of extra-curricular activities and other forms of entertainment should be increased significantly.

Administration and Management

The principal handicap to the improvement of the operation of Bureau schools is the insufficiency of the funds with which they are provided. The second most severe problem is the confusion of authority that exists between subdivisions of the BIA, so that decisions as to policy, programs and budgeting are often inappropriate to local educational needs. In addition, the processes for the collection, compilation, and interpretation of data are inadequate to provide a sound basis for decision-making.

The chain of command from school principal to Assistant Commissioner for Education is not clearly defined, and administrators are often unsure of their precise responsibilities. This uncertainty creates great problems for the majority of BIA administrators who are capable and responsible, and permits the minority who are deficient in these respects to excuse their failures.

The civil service status of Bureau teachers is one of the most serious problems of the educational system, as administrators are constrained from dealing with their staffs in a manner appropriate to their level of competence. Good teachers receive inadequate recognition, and those who are patently incompetent cannot be removed without considerable difficulty.

The level of Indian participation in the governance of their children's schools remains low, despite the Bureau's efforts to correct this situation. As a result, the operation of the schools, and the content of the instruction offered, is often inconsistent with the desires of the community

It is recommended, therefore, that appropriations to the Education Division of the BIA be increased greatly. Procedures for the collection and use of information relevant to decision-makers should be improved, and the chain of authority and responsibility simplified and clarified. The BIA school system should enjoy significantly more autonomy than it does at present, while coordinating its activities with those of other branches of the Bureau. In individual regions and schools, a structure similar to that of autonomous public schools systems should be instituted. A far greater voice in determining the allocations of funds should be given to local officials, who should possess authority to promote teachers according to their merit, and to dismiss those whose performance falls below minimum standards. The best means of accomplishing this is to remove Bureau teachers from the Civil Service. Existing programs for the increase of Indian participation in the control of their schools should be intensified and extended.

Integration of Educational and Economic Development

The educational, social, and economic disadvantages of the reservation Indian are closely interrelated. The lack of job opportunities and the low level of Indian educational achievement are mutually contributory. Those industries which could take advantage of the large size and low cost of the unskilled labor pool on reservations are constrained from location on reservations by the high cost of transporting their manufactures. Industries whose output is sufficiently small in size and quantity to make location on reservations feasible usually require more highly skilled workers than are presently available on reservations.

The types of vocational training offered by BIA schools are rarely determined by existing or prospective job opportunities. Students receive insufficient information abou the various types of possible employment, and do not receive adequate training and counseling in the social aspects of holding a job or of living off the reservation.

Planning for educational and economic development should be coordinated closely. Instruction and guidance provided to students should include preparation for the cultural and social experience of employment, both on and off the reservation, as well as training in occupational skills.

Sensitivity training for teachers and administrators should be conducted where there is skepticism regarding the capacity of Indian students to succeed in any but menial employment. The schools should serve as community centers in which Indians of all ages are made aware of their academic and economic opportunities.

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Description, Costs, and Cost-Effectiveness of 147 Possible Programs for the Alleviation of Instructional, Administrative, and Economic Deficiencies

Program Number	Cost-Effectiveness Index (in descending order)	Program Description	Overall Annual Costs
1.	∞	Establishment of Administrative Line Control	nil
2.	∞	Removal of Teachers from Civil Service	nil
3. (5)*	∞	Seminar Groups	nil
4. (6)	∞	Students Rating Teachers	nil
5. (7)	∞	Work Week in Review	nil
6. (8)	∞	Role - Switching	nil
7. (9)	∞	Intra - School Academic Competitions	nil
8. (16)	∞	Separation of Sexes in Classes	nil
9. (22)	∞	"Indian Corps" for Reservation Services	nil
10. (110)	∞	Community Planning of New Schools	nil
11. (119)	∞	Relation of Language Instruction to Other Subjects	nil
12. (120)	∞	Student Participation in Selection of Educational Materials	nil
13. (64)	728	Biographical Films on Indians	$ 7,500
14. (38)	379	Information Exchange Newsletter	22,500
15. (37)	376	Improvisational Theater Techniques	20,000
16. (2)	200	Cash Reward for Achievement	21,162
17. (121)	166	Use of College Facilities	9,000
18. (101)	159	Classroom Role Play	41,200
19. (105)	154	Games for High School Students	19,400
20. (41)	88	Vocational Mobility	100,000
21. (57)	85	Subscription to Journal	12,500
22. (55)	58	Increase Research and Development	100,000
23. (48)	54	Academic Awards	90,000
24. (94)	37	Distribution of Television Sets	98,000
25. (54)	36	Team Learning	450,000
26. (73)	34	Home Service Centers	104,000
27. (11)	32	Classroom Teams	153,500
28. (78)	29	Local School Control of Budget	100,000
29. (131)	28	Course in Non-Self-Sufficient Economics	154,000
30. (98)	26	Year End High School Conference	69,000
31. (32)	25	Innovation Councils	98,970
32. (29)	25	Student Produced Texts	280,000
33. (33)	23	Cross-discipline Course	271,900
34. (21)	22	Inter-School Academic Competetions	37,400
35. (134)	22	K-3 Language Arts Curriculum	241,300
36. (135)	22	4-6 Language Arts Curriculum	241,300
37. (65)	18	Indian Elite School	480,000
38. (40)	18	Short Field Trips	960,000

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* Numbers in parentheses are those used prior to the determination by computer of the rank order of cost-effectiveness, and therefore appear in the discussion of computer inputs and outputs in Volume III, Chapter XI.

P.N.	C.E.I.	P.D.	O.A.C.
39. (31)	18	Standardized Testing	$ 390,000
40. (50)	17	Recruit Indian Teaching	432,500
41. (72)	14	Parent Orientation Film	35,000
42. (90)	14	Para-Professional Scholarship Grants	212,000
43. (96)	14	Homework Helper Program	700,000
44. (84)	14	Touring Success Models	250,000
45. (103)	13	Educational Board Game	18,000
46. (113)	13	Film Series	180,000
47. (112)	13	Educational Exchange Program	344,000
48. (109)	12	Language Teaching Machine	115,000
49. (132)	11	Sociology of Minority Education Course	146,400
50. (81)	10	Social Studies through Art and Folk Songs	585,000
51. (128)	9	Course in Land Use	218,000
52. (56)	8	Improved Public Relations	146,000
53. (25)	8	Evaluate ESL Programs	400,800
54. (12)	8	Upward Bound to High School	535,000
55. (104)	7	Sociology and Language Arts Course	175,000
56. (133)	7	Course in Nations within Nations	68,250
57. (60)	7	Incentives for Principal Performance	1,200,00
58. (13)	6	College Preparatory High School	1,373,00
59. (35)	6	Ham Radio Shacks	500,00
60. (43)	6	Mechanical Zoo	165,00
61. (115)	6	Printing Presses	750,00
62. (139)	6	4-6 Social Studies Curriculum	436,20
63. (97)	6	High School Work/Study	570,00
64. (138)	5	K-3 Social Studies Curriculum	422,00
65. (118)	5	Teacher In-Service Training	300,000
66. (116)	5	Intensive Study Schools	500,00
67. (95)	5	Computerized Instruction	240,00
68. (15)	5	College System	1,000,00
69. (3)	5	Curriculum Development	3,600,00
70. (18)	4	Indian Elite School	250,00
71. (19)	4	Work/Study Program	3,229,00
72. (30)	4	Intensive School Drama Program	1,230,00
73. (36)	4	Elementary School Zoos	850,00
74. (59)	4	Research and Development Sabbaticals	750,00
75. (74)	4	Pre-College Work	825,00
76. (88)	4	Home Instruction by Siblings	57,500
77. (93)	4	Orientation Centers	444,00
78. (117	4	Teacher Training Program	540,00
79. (129	4	Wales Minority Sociology Course	158,40
80. (130	4	Junior High National Minority Sociology Course	134,80
81. (1)	3	Contract Schools	2,233,00
82. (20)	3	Master Tutors	2,265,00
83. (45)	3	Teacher Recruitment	2,619,00
84. (66)	3	Film and Tlelvision Analysis Course	740,00
85. (70)	3	Local School Boards	1,400,000
86. (76)	3	Loan Program	1,800,00
87. (79)	3	Quadruples Research and Development Budget	5,000,00
88. (86)	3	Foster Homes Near Central Schools	975,00
89. (102)	3	Indian Social Dynamics Study	2,000,00
90. (122)	3	College Special Centers	450,00
91. (14)	2	College Preparatory School after High School	1,530,00
92. (27)	2	Senior Language Teacher	468,60
93. (28)	2	Student Produced Films	2,900,00
94. (34)	2	Flight Training	1,100,00
95. (39)	2	Long Summer Field Trips	1,360,00

P.N.	C.E.I.	P.D.	O.A.C.
96. (47)	2	Teacher Pay Linked to Student Achievement	2,250,000
97. (75)	2	College Scholarships	2,400,000
98. (77)	2	Income-Producing Projects	1,000,000
~~99. (85)~~	~~2~~	~~Traveling Shows~~	~~690,000~~
100. (124	2	Minority Group Sociology Course	176,400
101. (125	2	Tribal-Governmental Relations Sociology Course	173,000
102. (126	2	Environmental Economics Course	213,000
103. (127	2	Ethnic Differentiation Course	158,000
104. (137	2	Media and Communications Curriculum	1,012,000
105. (141)	2	7-9 Social Studies Curriculum	836,000
106. (10)	1	Cost-Effectiveness System	880,000
107. (24)	1	Instructional Structures	865,000
108. (26)	1	Master Linguist Tutor	2,160,000
109. (42)	1	Heavy Construction Course	6,500,000
110. (46)	1	On-bus, on-line Education	6,200,000
111. (58)	1	Indian Teaching Aides	10,900,100
112. (63)	1	Video Tape Classroom	5,250,000
113. (67)	1	Contract School	675,000
114. (83)	1	Political Science Courses	200,000
115. (92)	1	Eleventh Grade Educational Research	4,201,000
116. (100)	1	Parent Involvement Planning Model	76,500
117. (108)	1	Greenhouse Construction	625,000
118. (123)	1	Course in Sociology of Adult Illiteracy	156,000
119. (136)	1	Junior High Language Arts Curriculum	606,000
120. (4)	1	Tutoring of Infants	4,150,000
121. (17)	.1 - 1	Family Cottage Boarding	35,000,000
122. (44)	↓	Technological Micro-Museums	1,500,000
123. (49)		Sabbaticals for Teachers	2,375,000
124. (52)		Mobile School Ship	10,000,000
125. (53)		Mobile School Truck	15,100,000
126. (61)		Truck Teacher/Counselors	6,000,000
127. (62)		Pupil Exchange Foster Homes	9,562,500
128. (68)		Parent Education in Evaluation	390,000
129. (69)		Parent School Orientation	759,000
130. (71)		Master Teachers for Parents	1,425,000
131. (80)		Integrated BIA Schools	9,500,000
132. (82)		Vouchers for Employment	41,800,000
133. (87)		Periodic Centralized Schools	6,020,000
134. (91)		Storefront Computer Instruction	306,000
135. (99)		Public School Placement by Guidance	452,000
136. (106)		Folk School	1,436,000
137. (107)		Indian Free University	620,000
138. (111)		Facilities for Parental Involvement	900,000
139. (114)		Library Combination	900,000
140. (140)		7-12 Social Studies Curriculum	1,662,000
141. (142)		Social Studies Curriculum, 10-12	826,000
142. (143)		Science Curriculum, 1-3	3,985,000
143. (144)		Science Curriculum, 4-6	4,390,000
144. (145		Science Curriculum, 7-9	4,625,000
145. (146)		Science Curriculum, 10-12	3,355,000
146. (51)	0 - 0.1	Mobile School Helicopter	24,000,000
147. (89)	0 - 0.1	Multiple Small Day Schools	35,500,000

BIA Schools Long-Range Planning Models

An interrelated set of eight planning models for high-level use has been designed. The models will assist Bureau planning through the projection of future trends of reservation population, school facilities and the necessary supporting personnel and equipment, economic changes on the reservations, and desirable locations for future school construction. The models shown in the attached figure, are:

1. Population Projection Model and Enrollment Projection Model
2. Facilities Use and Planning Model
3. Economic Projection Model
4. Equipment Projection Model
5. Personnel Projection Model
6. Facilities Location Model
7. Finance Management Information System Model
8. School Investment Model.

Each of the models is modular in form, so that the unavailability of data for one part of the model will inhibit as little as possible the operation of the other parts of the model. If, for instance, data on equipment maintenance costs is not readily or inexpensively available, the part of the Equipment Projection Model which projects equipment maintenance costs will not be run. The other outputs of the model, such as replacement costs and timing, will still be generated.

Another feature of the model design is that the outputs of certain of the models (as shown in the attached figure) are structured in such a way that they will be able to be used as inputs by the succeeding models.

Each model is described briefly in this chapter. More detailed text, numerical examples, flow charts and detailed mathematical specifications for each model are included in Volume III of this report.

POPULATION PROJECTION AND ENROLLMENT PROJECTION MODELS

Given an initial age distribution in a population and information concerning rates of birth, death, migration, fertility and infant mortality, the Population Projection Model predicts the age distribution and various demographic statistics for the population at the end of each of an arbitrary number of five-year periods. The Enrollment Projection Model takes output from the Population Projection Model, as well as information about school enrollment and entrollment trends, and predicts the enrollment in each of the school grades at the end of each of an arbitrary number of five-year periods.

FACILITIES USE AND PLANNING MODEL

The facilities use and planning model enables its users to predict future needs for classroom and administrative space by year and use type. Inputs are descriptions of existing facilities and information on the expected growth of the population using the facilities.

Specific outputs include needed facilities of all types by grade, year and agency, as well as projected enrollment data.

ECONOMIC PROJECTION MODEL

The Economic Projection Model estimates changes in the location and employment of populations on reservations, and describes the concurrent changes in geographic development by industries.

Inputs needed by the model include existing transportation network, utilities, natural resources, labor supply, industry, geographic constraints, and changes in population.

EQUIPMENT PROJECTION MODEL

Associated with increases in staff and changes in facilities, as well as with changes in teaching techniques and technology, are changes in equipment requirements for the Bureau's schools. This model projects these needs and their costs.

It takes as input equipment needs by various indicator variables - classroom, schools, administrators, teachers, etc. Present equipment inventory is also an input, along with estimate of equipment life.

Changes in these ratios over time are used to allow for changes in technology and Bureau policy. The model gives outputs of inventories over time, necessary purchases, and maintenance requirements, along with their associated costs.

PERSONNEL PROJECTION MODEL

The Personnel Projection Model provides the Bureau with a description of future personnel, needed recruitment to meet these future personnel needs, and costs of maintaining these future personnel levels.

The model takes as inputs present personnel and their assignments in the BIA schools and administration, turnover rates, and planned changes in the personnel requirements brought about by changes in the client population.

The model combines these inputs dynamically to determine the needs by year for both presently employed and new staff.

FACILITIES LOCATION MODEL

In the light of changes in the reservation economies and expected changes in population size and location, consideration of the location of future school construction is called for. This model carries out the function of school siting analysis. The model takes as inputs the changes in local economies predicted by the Economic Projection Model and the changes in facilities requirements predicted by the Facilities Use and Planning Model. On the basis of this information, the model evaluates alternative facilities location plans in terms of how well facilities are used and how efficiently the plan serves the student population.

FINANCIAL MANAGEMENT INFORMATION SYSTEM MODEL

The Financial MIS Model is designed to project realistic one-year operating budget estimates along with less sure predictions for additional years in the future. The model is based on a relatively uncomplicated sorting of cost data, both input and derived, into cost categories (budget line items). Another important feature is the model's ability to accept discretionary policy information directly and convert it into the projection figures.

For example, should this model be used to predict next year's budget, the initial constants and structural relationships would be taken from data produced by this year's end-of-year financial status reports. Other inputs used would be the outputs of the Facilities, Equipment and Personnel Planning Models as well as enrollment statistics and projections. Data concerning changes in expenditure-per-student policies is required as representative of program alternatives.

The output produced by the model delineates an operating budget according to cost category. This estimation is outputted, and also used as an input for the model's next iteration. Thus, projections for one year into the future are based directly on actual data, while projections further into the future are based on previous estimates. Of course, the less realistic future estimates are only needed to indicate trends to appropriations committees, while the sound one- and two-year projections can be used for operational planning and budget allocation.

INVESTMENT MIX MODEL

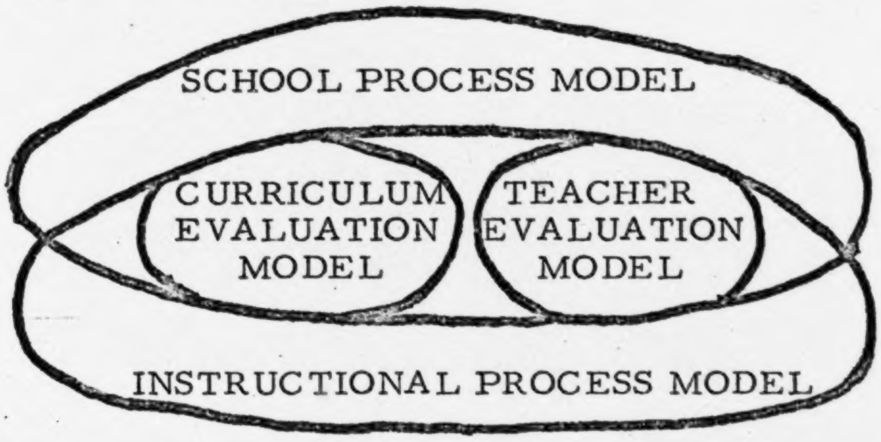
The Investment Mix Model can assist Bureau decision-makers in the consideration of the allocation of funding for the Bureau's schools. By explicitly considering economies of scale, likely returns on investment in alternative schools, student characteristics, and geographical considerations, the model lays out alternative budget allocations, as well as the hirings, student transfers, program and schedule modifications, and, occasionally, school closings - all of which dictate budget changes.

Internal School Models

Four internal school cost-effectiveness models for aiding in implementation of planned changes in schools are presented in detail in Volume IV of this report. Briefly, they are:

1. The School Process Model (SPM). Presented in the form of a planbook entitled "Operation Self-Renewal" (OSR). The OSR planbook is designed to assist in identifying problem areas within the school, developing appropriate and potentially cost-effective program solutions to identified problems, and testing and revising those programs until they can become "normal" school process components.
2. The Teacher Evaluation Model (TEM). Also presented in workbook form. Its principal uses are: developing an "in-service" strategy for increasing teacher effectiveness; and providing an objective data base for teacher advancement decisions.
3. The Curriculum Evaluation Model (CEM). An instrumented technique for determining cost-effectiveness of alternative curriculum materials.
4. The Instructional Process Model (IPM). Designed to generate and/or evaluate cost-effective educational programs directed toward specific instructional objectives both inside and outside the classroom.

The relationship of these four models to each other is depicted in a general way in the diagram below.


SCHOOL PROCESS MODEL
CURRICULUM EVALUATION MODEL
TEACHER EVALUATION MODEL
INSTRUCTIONAL PROCESS MODEL

Whatever other objectives the four internal school cost-effectiveness models may serve, their principal aim coincides with the chief goal of elementary and secondary schools: the increase of appropriate student achievement and satisfaction.

Chapter IV: Processes of Change and Implementation

Review of Indian education goals and the present realities led to the development of specific programs and models which will help to close the gap between the present situation and goals. These programs and models were described briefly in Chapter III of this volume and are discussed in greater detail in Volumes II - IV of this report. In order to utilize the findings of this report adequately, the BIA Division of Education must take a number of steps including implementation of line control and other general recommendations, use of the program unit cost-effectiveness model, and implementation of the long-range planning and internal school models. These tasks are each dealt with in turn below.

Line Control and Other General Recommendations

Control of the personnel, funds, and information needed to implement improvements in BIA schools is not now in the hands of those responsible for student and teacher performance. Sound management practice requires, however, that control and authority match responsibilities. Therefore, a pre-condition to major improvements in the BIA schools is the granting of direct line authority over the schools to the Central Office Division of Education responsible for their performance.

The relative inefficiency of the administrative system of the BIA is in part the result of uncertainty as to the allocation of responsibility, and of inadequate definition of hierarchies of authority. Certain officials should have the titles of their jobs changed to reflect more accurately their precise responsibilities. The Assistant Area Directors for Education should be renamed Area Superintendents of Indian Schools; the Assistant Commissioner for Education should receive the title of Superintendent of Indian Schools. The chain of authority from school principal to Area Superintendent to National Superintendent would thus be unmistakable. There would be no confusion of authority with the BIA area directors, whose point of view is generally natural resources oriented and who should be free to devote all their time to economic development.

The Division of Education must have control over school information, as well as personnel and funds, if it is to make informal decisions. A thorough and orderly system of data collection, processing, interpretation, and dissemination should be instituted under the operational control of the Education Division user.

In addition to the reasons of sound management for giving the Central Office's Education Division line control of the schools, there is also a reason of administrative incentive. Only the national lead of the BIA has the administrative incentive to turn over local control of the BIA schools to Indian communities.

Despite a Presidential directive issued more than two years ago, only a few BIA schools are governed by elected school boards. This may in part be attributed to the reluctance of Indians and Eskimos in many areas to serve on school boards. Existing programs to enlist the participation of Indian adults in the control of the schools in their communities have enjoyed only partial success. In addition, no community control exists over those high schools which are located off the reservation and which include students from more than one tribe.

The Bureau should designate a specific date, probably not later than 1980, for the institution of community control over all schools within its jurisdiction. Readiness for community control should be determined by consultation between members of the local community and officials of the BIA. Where the BIA disagrees with community leaders' contention that they are ready to assume control of the schools, the dispute might be referred to a council composed of representatives of all community-controlled school boards. This council, meeting each summer, could participate in the formulation of national policy as well. Where a school is located off the reservation, and includes students of several communities and tribes, a system of proportional representation might be established. Under such a system, the composition of the school board, which would conduct periodic evaluations of the school, would reflect the proportion of students of each tribe in the school.

Although parts of the BIA administrative system are inefficient and slow to respond to the needs of the Indian population, transfer of the BIA to another department of the Federal Government would be a less efficient means of improving its operations than internal reorganization. The recommended form of internal reorganization would give the Assistant Commissioner for Education direct line authority over area, agency, reservation, and school superintendents. This authority would be shared at each level by Indian school, reservation, agency, area, and national boards. Thus, the interests of both the local Indian communities and of national policy would be represented in control of Indian schools.

The Civil Service status of BIA teachers and staff members has several deleterious effects on the effectiveness of the instruction offered by BIA schools. Administrators are constrained by regulations from offering outstanding teachers salaries commensurate with their abilities, and from discharging incompetent employees, except with great difficulty. Recruitment of promising applicants is also hampered. BIA teachers and staff members should enjoy a status comparable to teachers in most urban school systems, rather than that of federal Civil Servants. Present BIA staff should be offered the choice of remaining on Civil Service status.

Among teachers, the turnover rate is much higher than in most schools in the United States. Often the most ambitious and promising teachers are those who leave the system first.

The removal of BIA teachers from Civil Service rolls would facilitate the recruitment and retention of good teachers, and the removal of those proven to be incompetent.

The public image of the BIA is extremely poor, and deleterious to recruitment, internal morale, and adequate funding. The BIA should attempt to improve its image, not by an advertising campaign, or any such "cosmetic" means, but by effecting and then publicizing major internal reforms. No clear policy exists to direct whether schools should provide vocational training, academic instruction, or a combination of both. As a result, decisions are made locally, without the benefit of nation-wide research and analysis; often they do not conform to the stated goals of the overall BIA educational system.

As stated previously, better definition of hierarchies of authority and responsibility would make local administrators more responsive both to local needs and to directives from higher authorities. At the same time, national policy for Indian education must be annually formulated on the basis of timely and thorough special science research, which research should be pursued much more intensively and continuously.

BIA administrators at all levels, from the national office to the school level, require training in the management of education systems. A program of both preliminary and in-service management training should be instituted at all levels of the BIA. Among the areas covered should be the management of finance, personnel, and operations, and the process of planning for future needs.

Reliable data as to the performance of Indian students is difficult to obtain, as nationally standardized intelligence and achievement tests are not regularly and comprehensively administered. In order to compare the intelligence and achievement levels of Indian students to those of students nation-wide, standardized intelligence and achievement tests should be administered to all of them annually, with results collected, analyzed, and disseminated annually.

The effectiveness of education in schools run by the Bureau of Indian Affairs is inextricably associated with the level of employment on the reservation. Any plans for the improvement of Bureau schools must be integrated with comprehensive planning for the expansion of reservation job opportunities and economic development. Without job opportunities, education alone will not raise Indian economic levels.

The rate of unemployment on Indian reservations ranges from twenty percent to eighty percent; fifty percent is average. Of the fifty percent employed, fewer than half are fully employed; of these, most are employees of the BIA. These rates of unemployment are usually ten to fifteen times the levels in adjacent non-Indian areas; they cannot, therefore, be ascribed to regional economic depression. This high level of unemployment is a serious social and psychological barrier to effective education in the BIA schools, because the economic relevance of academic studies is denied by it, with consequent impairment of student motivation.

BIA schools are at this time insufficiently funded to overcome the students' initial difficulties resulting from poverty and cultural barriers. The price of this "economy" is ultimately paid in high welfare payments and reduced revenues. Annual per pupil expenditures, now around $1,000, should be greatly increased on the basis of conserving future welfare costs and income tax collections.

Many BIA personnel cling to the incorrect and unrealistic belief that reservation economies can be viable through agriculture, handicrafts, and tourism alone. BIA education must reflect the reality that the creation of new and lasting job opportunities on reservations can result only from better education and substantial industrial development.

The general thrust of BIA education at this time appears to direct students toward eventual departure from the reservation and migration to a city. The schools do not, however, prepare students academically, socially, psychologically, or vocationally for urban life. As a result, many return to the reservations disillusioned, to spend the rest of their lives in economic and intellectual stagnation.

Schools must acquaint students with the characteristics and implications of three basic alternative identities from which they may choose:

complete "Indianness", biculturalism, and total assimilation into the mainstream culture. Instruction must be improved, and intensive career counseling instituted.

Indian students have little awareness of the role and functions of white-collar workers. As a result, they tend not to seek occupational opportunities in this area. An effective and large-scale program should be instituted to allow those members of the community who wish to to find out about job opportunities, urban politics, services, life styles, housing, and entertainment in off-reservation areas. The school library is the logical location for the implementation of this program. Current magazines, a wide variety of films, and guests should be made available to the local residents.

Research indicates that most Indians who leave the reservation to find jobs in cities would prefer to return to the reservation if jobs were available for them there. Despite the lack of job opportunities, the proportion of Indians who return to the reservation after a period of residence in a city is high. This is often the result of problems of family breakup, drinking, and unemployment.

An inventory should be compiled of the skills of all persons on tribal rolls, whether or not they still reside on the reservation. When a job becomes available on a reservation, and no Indian on the reservation is qualified to fill it, a tribal member holding a similar job outside the reservation should be invited to return to the reservation to fill the position. In addition, programs of economic development are necessary in order to broaden job opportunities on the reservations.

Indians participate little or not at all in the planning and development of new programs for Indian education, training, employment, and economic development, despite approval of such participation by the national office of the BIA. Monetary payment, and the assignment of significant responsibility, should be used as inducements to Indians to participate in the planning and development of such programs.

Few Indians are at this time competent to collect and interpret data for the planning of reservation development projects. Therefore, reservation development plannnng should be included in the curricula of on-reservation BIA schools. Students should collect most of the data needed for surveys of local needs, resources, and skills. Science classes could conduct inventories of natural resources; social studies classes, inventories of needs and skills; and math classes, the computation of financial requirements. The writing and editing of reports would be the responsibility of English classes.

Indian reservations urgently require more housing and school facilities; at the same time, there exists on reservations a large pool of unskilled, unemployed manpower. BIA schools should serve as focal points for the organization of federally financed housing cooperatives, requiring from outside the reservation only those raw materials and machines not locally available, and persons to train local Indians in construction skills. In this way, the housing and school facilities shortages could be relieved, unemployment reduced, and numerous Indians trained in construction techniques.

With few exceptions, the facilities, staff, and equipment of BIA schools are not used as community resources for adult education and other activities. On weekends and after class hours, BIA schools should operate as multi-service community centers, in order to increase parental involvement in the schools and to reduce the cost to the federal government of services to the adult Indian community.

Indian reservations are rarely selected as sites for the location of new industries for a variety of reasons: geographic remoteness, meager natural resources, lack of skilled labor, poor local infrastructure, and, occasionally, local political instability. In order to induce industries to disregard these disadvantages, labor subsidies and easy credit financing should be offered to labor-intensive industries establishing plants on Indian reservations.

Credit should be made available on generous terms to entrepreneurs desiring to begin needed projects, such as housing, factories, and small businesses. Financial planning and counseling should also be provided without cost. An Indian Development Corporation, proposed by Herbert E. Striner of the Upjohn Institute, would issue $200,000,000 in bonds to finance reservation economic development; a federally supported, but tribally operated, development corporation might be established on each reservation.

The insufficiency of integration between economic and educational development of reservations, as well as the instructional and administrative problems of the BIA schools, require the implementation of concrete programs in numerous areas. The analysts recommend that the list of suggested programs which follows this section be used as the basis of effecting improvements in the problem areas described. Planners should consider, in deciding between alternative programs to achieve similar or related goals, both the cost and cost-effectiveness of each program.

The principal reason for the present deficiency of education in the BIA schools is the inadequacy of the instruction offered. Programs should be begun immediately for the improved recruitment, selection, training, and supervision of teachers, counselors, and teaching aides. Continuous curriculum development efforts, such as the BIA's Project Necessities, are also necessary if curricula are to be made more appropriate to the needs of Indian students; new curricula in the area of language arts are most urgently required.

Insufficient research has been conducted as to the factors which determine what education programs will be effective with Indian students. Substantial research, involving the participation of both Indian students and adults, should be conducted on this question. As a first step, data on student intelligence, achievement, and attitudes should be collected and processed annually. In addition, data on the academic and occupational careers of former students in BIA schools should be compiled.

The intellectual level of both instruction and curriculum should be raised, without exceeding the currently underachieved learning abilities of students. This increased intellectual standard can and should be achieved by a combination of:

1. Recruitment and selection of teachers with high standards of intellectual and academic achievement.
2. In-service education of teachers showing promise of raising their standards if given further educational opportunities.
3. Development of more motivationally effective and intellectually demanding curriculum materials in all core subjects at all levels.
4. Institution of culturally rewarding extra-curricular activities on a much more intensive and planned basis.
5. School administration leadership encouragement of 1 - 4 above.

There are presently a great number of Indian students who suffer from some physical, mental or emotional disability which impedes their progress in school. This is particularly the case when these students are not identified and given special compensatory services. All entering students should therefore be examined for eye, ear, motor, mental, emotional, nutritional and other deficiencies which affect learning ability and personal wellbeing. This initial screening should be performed by elementary school teachers trained to administer standard screening tests. Initial screening should be followed by referral to PHS doctors where necessary. In remote areas (such as Alaska), a roving team of M.D.'s and nurses should provide follow-up diagnoses and treatment.

The number of Indian and Eskimo teachers is insufficient to provide students with bicultural role models to emulate, or to guarantee adequate communications between teachers and students. Bilingual, bicultural adult teaching aides have been extremely useful in teaching students who enter school unable to speak English, but are used insufficiently. Therefore, the recruitment of Indian and Eskimo teachers should be intensified.

Very few BIA teachers speak an Indian or Alaskan native language, although many pupils enter school unable to speak English. A program of limited language training should be provided to enable teachers to communicate, if only on an elementary level, with children who are not fluent in English. A more cost-effective approach is the recruitment of teachers fluent in Indian and Alaskan native languages, and this should be intensified.

BIA teachers and administrators sometimes appear to expect their students to do poorly in school. This helps guarantee that students will, in fact, perform badly. A continuing program of in-service teacher and administrator education in the potential capabilities of Indian students, and how these capabilities can be identified and developed, is essential. Sensitivity training may also help to overcome this problem to some extent.

Many BIA administrators and teachers, and many Indians as well, believe that Indians can choose only between total "Indianness" and complete assimilation in the broader American culture. Schools should stress as well the alternative of biculturalism, which offers Indians the best possibility of combining a firm cultural identity with occupational success and consequent self-esteem.

Teachers and administrators do not always show sufficient initiative or imagination in overcoming resource constraints on effective instruction. Incentives need to be established for teachers and administrators to innovate improvements within resource constraints. Incentives should involve both social and financial rewards, in the form of interesting meetings and bonuses and promotions respectively. Examples include innovation councils at all schools, pay and sabbatical bonuses to teachers based on outstanding student achievement gains, educational field trips, and, of course, rapid promotions for merit.

Verbal fluency in English is the prerequisite to all other academic achievement; in consequence, many Indian children never perform academically at a level commensurate with their intelligence. In some schools, where students enter school speaking only their native language, the first two or three years of schooling might consist solely of intensive training in language arts.

Indian children are often reluctant to "outshine" one another, and will sometimes prefer to seem ignorant than to show knowledge greater than that of a classmate. In order to reduce the appearance of competition between individual students in the classrooms, student teams (called "committees" by one teacher at the Haskell Institute, where the technique has been used with great success) should be employed. This method, in addition, permits informal tutoring of students by their peers, and trains students in social interaction and collective problem solving.

Rigid structuring of classes has several deleterious effects on student performance. The most able students are impeded by the slower progress of some of their classmates, while slower students often feel humiliated by their poor performance, or are ignored by the teacher. Owing to the disparity between students' abilities, the teacher is often forced to become the custodian rather than the instructor of the students. The use of "performance groups" (teams) would permit students to work at their own pace. The use of different instructional techniques and curriculum materials with comparable groups of students, studying the same subject, would permit comparison of the relative effectiveness of the different materials and approaches.

Although schools are adequately supplied with audiovisual equipment, it is usually not used as effectively or as frequently as would be desirable. Teachers are often unaware of the potential of the equipment at their disposal, and are untrained in its use. A program to acquaint teachers with the techniques and applications of audiovisual equipment should be instituted.

The vocational education programs now offered by BIA schools usually do not train students in marketable skills, and consume time and other resources more profitably spent in academic courses or genuinely valuable vocational training. Vocational education should be broadened to include training in such fields as computer programming, aircraft piloting and mechanics, and the operation of heavy construction machinery. Vocational education programs must be justifiable in terms of two basic criteria: contribution to academic performance (if only by increased maturity), and direct contribution to remunerative and upward-mobile employment. The latter may best be achieved by subsidies to local industries to offer on-the-job training.

Counseling for both students and staff members is inadequate. The ratio of counselors to students is now approximately 1:100; counselors often lack professional training, and receive insufficient supervision; career and occupational counseling are only rarely offered; and psychological counseling is almost non-existent. The ratio of counselors to students should be reduced to 1:25. Counselors should receive more training and supervision, and programs of occupational, career, and psychological counseling should be instituted on a large scale.

Communications between teachers and counselors are often poor. Students are able, as a result, to "play off" one group against the other. Frequent meetings should take place between teachers and counselors in order to coordinate their responses to student problems of learning and behavior. Where appropriate, a student who is having difficulties, his teacher, and his counselor should meet as a group to discuss his problems and their solution. These meetings should be organized and monitored by all school principals.

The high suicide rate among some American Indian groups, frequently the subject of comment in the national press, cannot be explained simply by the social and economic disadvantages faced by Indians.

In some plains tribes, old and infirm persons have for centuries committed suicide so as not to be a burden on their children. In other tribes, principally in the southwest desert, suicide is extremely rare; the Pueblo Indians are representative of this group. In still other tribes, such as the Cheyennes and Shoshones, the rate of suicide among adolescents is more than ten times the national average: over seventy percent of the suicides among members of these tribes are committed by persons between fifteen and twenty-one years old. This is again a case of a cultural tradition. Among Cheyennes and Shoshones, suicide is usually the result of a family tragedy, such as the death of a relative or a parent's desertion, or of acute feelings of failure, engendered by poor academic performance, withdrawal from school, public drunkenness, or difficulties with the police (or the sudden end of a love affair). There is no evidence indicating any relationship of BIA boarding school attendance to the incidence of suicide.

Where suicide is generally related to academic failure, family breakdown, or problems with the police, programs of economic and social development and of educational improvement may tend to reduce suicide rates. The extension of comprehensive and attractive medical care for old and infirm Indians may cause a reduction in the number of suicides among persons in that group.

Where self-destruction is a traditional response to extreme grief, the problem is more difficult. Adolescent suicides in this category may be averted through the employment of trained psychologists, one of whose primary responsibilities would be to seek out students in whom teachers and teaching aides have noted signs of severe depression.

The relationship between school staff members and parents is usually too formal and distant. On the rare occasions when parents visit their children's schools, they often feel unwelcome. Some notable exceptions to this general rule are the Rough Rock, Rock Point, Tuba City, and Blackwater Schools. Parents should be encouraged to visit their children's schools, attend their classes, participate in their activities, and discuss their academic and personal development with teachers, counselors, and administrators.

Health services in the boarding schools are often seriously deficient. In some schools, ill students must, because of a lack of infirmary personnel, return each night to their dormitories, where contagious diseases may spread rapidly. Health services in the boarding schools must be improved, and round-the-clock infirmary service must be provided.

Particularly in the boarding schools, extra-curricular activities for students are lacking. As a result, students are bored, especially on weekends, when many teachers and staff members are absent. The students' boredom is a major reason for their indulgence in liquor and illegal drugs. A large-scale program of supervised extra-curricular activities should be instituted, especially in the boarding schools; programs should be sufficiently diverse to provide for the needs and interests of all students.

Dormitory discipline is often unnecessarily strict and confining. Students in their late teens and early twenties are often forced to conform to rules appropriate for children half their age. Although students tend to observe these rules, this does not negate their harmful effect on student maturity, self-reliance, and self-discipline. Rules of discipline in the boarding schools should be revised to conform to standards appropriate to students' ages. Students should be given partial authority over the enforcement of such regulations.

The morale problems of Indian students are exacerbated by their dissatisfaction with the food served to them. Although nutritious, usually it is unimaginatively prepared and "institutional" in its flavor. Menus are not prepared in consultation with the students. At small additional cost, food could be prepared in such a way as to appeal to the students.

Within resource constraints, their dietary preferences should be respected. The addition of Indian and Alaskan native dishes to the menu could raise student morale appreciably.

Use of the Program Mix Cost-Effectiveness Model

The need for additional funds for new programs has already been described. Requests for additional funds and availability of additional general operating funds will then require decisions about the most cost-effective way of allocating those funds. The Program Mix Cost-Effectiveness Model (described in Volume III, Chapter XI and presented in Volume V, Appendix D) provides a means for the Central Office administrator to make rational decisions about the allocation of additional funds. It accomplishes this by requiring the user to make explicit decisions about the priority of BIA education problems, the effectiveness of proposed programs in dealing with those problems, and the costs of the proposed programs.

Use of the model incurs no expense other than that of the planner's time. Moreover, the logic of the model is simple and straightforward, and can easily be maintained by the user, even if he should decide to make structural modifications, such as changes in the problem area definitions. It is, therefore, recommended that this model be used as an aid to evaluation of alternative mixes of proposed programs, in much the same manner as it was used by Abt Associates (see Volume III, Chapter XI) to evaluate the effectiveness of programs proposed for the BIA.

Implementation of BIA Long-Range Planning and Operations Analysis Models

INTRODUCTION

The long-range planning and operations models described in Volume III of this report can play a significant role in upgrading Indian education by permitting BIA planners to better control present expenditures and more adequately anticipate and plan for future needs. The Finance Management Information System Model will serve the former function, while it in addition to the Population and Enrollment Projection Models, the Facilities Planning Model, Economic Projection Model, Facilities Location Model, Personnel and Equipment Planning models and School Investment Model will permit fulfillment of the second function--that of long-range planning.

Implementation of these models will neither be an easy nor inexpensive task. Yet such implementation seems crucial to the improvement of BIA schools: the cost in time and money should be more than offset by improved use of available resources.

The task of model implementation requires both concerted organizational effort on the part of a number of Bureau administrators and a commitment of resources to that task. This chapter presents a feasible approach to the task. The discussion includes startup and ongoing organizational and staffing methods, delineation of tasks and probable sources of necessary data. Each of these topics is discussed below.

STARTUP ORGANIZATION

Implementation of the BIA models will require intensive effort at the beginning. Staff required will be much greater than that required once the models become operational. These staff requirements stem from the subtasks which are a necessary part of startup. The tasks are:

1. Identification of available and needed data for operation of the models.
2. Choosing priorities of model development within constraints.

3. Design of methods for feeding available data to the models and gathering presently unavailable data.
4. Programming of models for computerized operation.
5. Gathering of initially necessary data.
6. Determination of policies required as model inputs.

These tasks apply regardless of which models are chosen for initial development. Since the models themselves are linked and since it will be most efficient to gather data for all choice models at once, it is suggested that a BIA Washington Office staff member be made the administrator and systems analyst, in charge of all model development. Until the models become operational, it will be necessary for this systems analyst to have a number of staff under him to accomplish the startup tasks.

The Systems Analysis Office will act as coordinator of the entire implementation and operation of models. In order to accomplish its tasks, it must be provided with the necessary authority by the BIA central office. Such authority should include the following:

1. Authority to obtain data from BIA sources.
2. Authority to devote resources to non-BIA data-gathering arrangements.
3. Authority to consult with original designers of the models--Abt Associates, Inc.--concerning implementation of the models.
4. Authority to direct the activities of a portion of the Indian Affairs Data Center (IADC) staff towards the completion of the necessary tasks.

Given the general task of startup and the needs of authority, the startup organization should take the form diagrammed in Figure 1.

STARTUP TASKS AND ORGANIZATIONAL FUNCTIONS

The organization diagrammed in Figure 1, is postulated for the startup tasks. How this organization will operate is a function which changes according to the task under consideration. Therefore, each task with its concommitant responsibilities, methods, and staff needs is discussed in turn below.

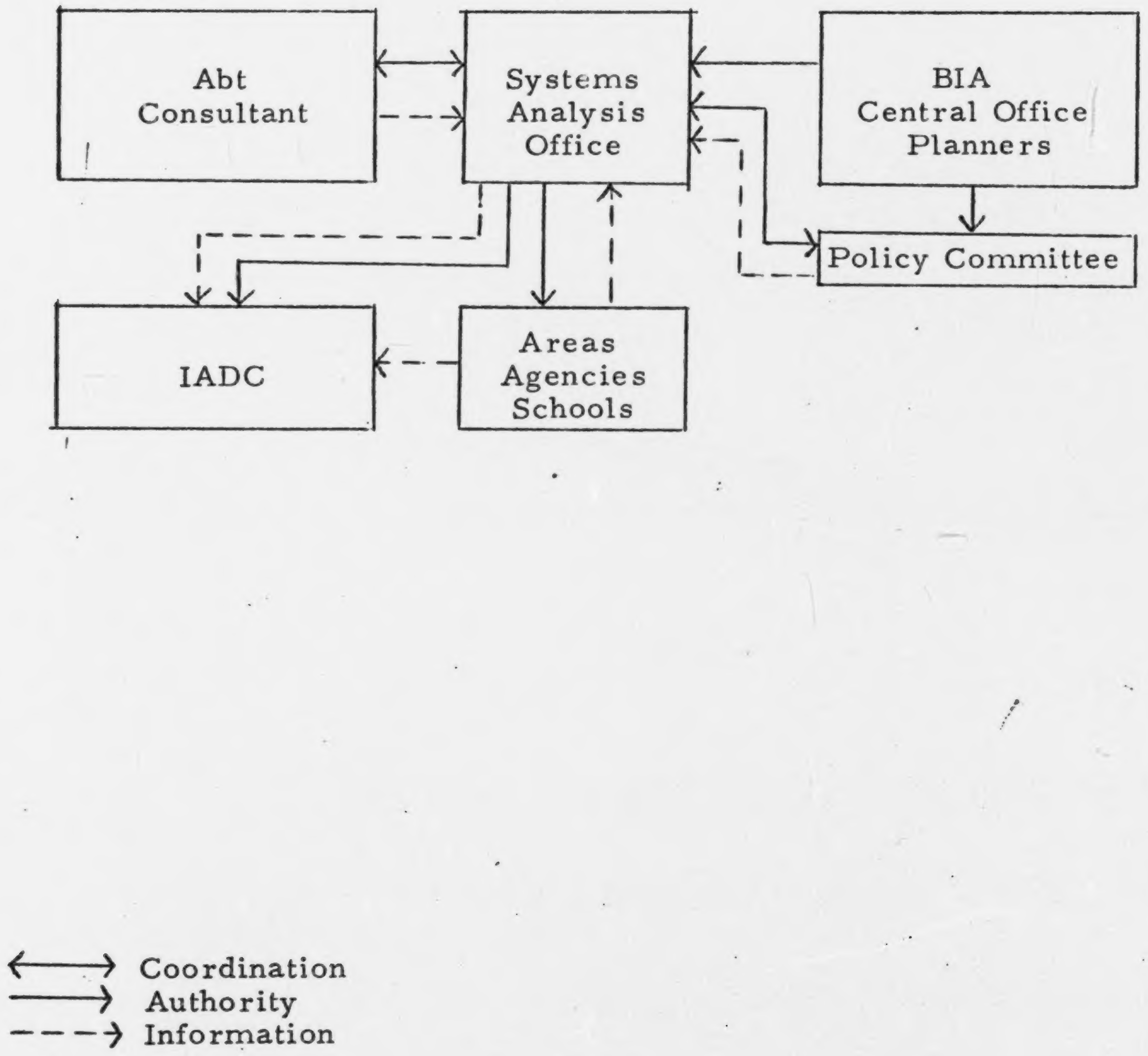

Abt Consultant
Systems Analysis Office
BIA Central Office Planners
Policy Committee
IADC
Areas Agencies Schools
Coordination
Authority
Information

Figure 1: Startup Organization for model implementation.

Task 1: Identification of available and needed data for operation of the Models

Task Description

The task will involve a comparison of the data needs of the BIA long-range planning models with the presently available data. Needed data which is presently unavailable will call for identification of the best source for obtaining such data.

The models require a great many different types of data (see Model Input Variables and Probable Sources Appendix, Volume III), and each model requires data from at least several different sources. In fulfillment of this task, it is thus imprtant to identify the type of data needs and collate similar source requirements in order to most efficiently design data-gathering methods as part of Task 3. These data will be of eight general types, each of which will present different problems in collection.

Typical Model Data

	Time Needed	
Data Source	During Startup	During Ongoing Model Operation
Available	1.	5.
Inaccessible	2.	6.
Policy	3.	7.
User	4.	8.

"Time Needed" will determine whether ongoing collection mechanisms are necessary, and "Data Source" will determine the type of collection method which will be designed by part of Task 3. Task 1 involves the identification of each data need and its location in the matrix given above.

Responsibility and Imvolvement

Accomplishment of this first task will be the responsibility of the

Systems Analyst and his staff. They will have to consult with appropriate people within the BIA in order to determine available data and sources of needed data. These people will include the staff of the IADC, area, agency and school officials, as well as planners in the Bureau Central Office

Staff Requirements

Position	Estimated Time Needed for Task Fulfillment
Systems Analyst	2 Man-Months
Assistant to Systems Analyst	3 " "
Cooperating BIA Staff	Minimal

Task 2: Choosing priorities of model development within constraints

Task Description

This task involves choosing among the models those which should be immediately implemented. The basic trade-off to be considered in this selection process is the cost of gathering data for each model versus the importance of the model in providing information for planning or for other models which are crucial to planning. The importance of the models for planning must be decided by Center Office planners, while the cost of obtaining data for the models can be determined at the end of Task 1.

It is the recommendation of Abt Associates that all models be implemented immediately, except for the Economic Projection and School Location Models, for which information is difficult to obtain and need is not yet substantial. The School Investment Model may be developed independently of the others, and it is suggested that this be done in a pilot agency or area before it is implemented for use in the entire school system.

Responsibility and Involvement

The decision-making should involve the Assistant Commissionaire of Education and the heads of the various planning departments in his office, as well as members of Systems Analysis Office .

Staff Requirements

Minimal.

Task 3: Design of methods for feeding data to the models and gathering presently unavailable data.

Task Description

This task depends upon the output from Task 1.

Needs and sources of available data will dictate the mechanism for insuring that the data is properly fed to the models. Presently unavailable data may be gathered by use of one-time surveys if the data is only needed for startup. Otherwise, mechanisms--including source designation, proper forms and standard operating procedures--must be instituted for ongoing data gathering.

Data which requires policy decision on the part of the BIA (staff/pupil ratios and the like) must be clearly defined so that a BIA policy committee (discussed in Task 6) will have clearly defined tasks in terms of what policy decisions need to be made.

Finally, data which is to be supplied by the user (such as number of iterations) must be gathered by a form filled out by the user when he requests a run. Separate forms should be designed for each model which is operationalized as a result of Task 2 decisions. These forms should have space for all information required from the user in order to process his run.

Responsibility and Involvement

Primary responsibility for accomplishment of Task 3 will be in the hands of the Systems Analyst and his staff. Consultation with a diverse group of BIA staff will be necessary to ensure that the mechanisms designed will be suitable to individuals' needs and abilities. In addition, so that operation of the models will require the simplest data transfer of information from forms to computer, it is crucial that the Task 3 effort be coordinated with the Task 4 effort in such a manner that computer formats and designed forms fit one another as closely as possible.

Staff Requirements

Position	Estimated Time Needed for Task Fulfillment
Systems Analyst	4 Man-Months
Assistants to Systems Analyst	8 " "
Cooperating BIA Staff	As needed

Task 4: Programming of Models for Computerized Operation

This task is probably the most straight-forward of all implementation tasks. It involves programming (probably in Fortran IV computer language) of all of the models except the School Investment Model. This programming will use as its source the text and more particularly the English language and detailed mathematical flowcharts presented for each planning model in Volume III of this report. Subtasks to which special attention should be paid in performance of this task are 1) programming the models in such a way that output data from one model can be automatically fed into storage arrays of another model when the user wishes to run a sequence of models, and 2) coordinating the input formats with data-gathering forms being designed by the Systems Analysis Office as part of Task 3 .

Responsibility and Involvement

The IADC will be principally responsible for performance of this task, utilizing its already available staff. The IADC should consult with the Systems Analysis Office to coordinate formats and planning needs, and with Abt Associates to resolve any model programming requirements.

Staff Requirements

Position	Estimated Time Needed for Task Fulfillment
Systems Analyst	1 Man-Month
Assistants to Systems Analyst	2 " "
Programmer	6 " "

Task 5: Gathering of initially necessary data

Task Description

This work will be carried out as prescribed by the output of Task 3. It will probably involve a variety of different methods including a school survey, special census, library search for statistics, and adaptation of previously available data such as that on file at the IADC. (Volume III's Appendix described in detail the likely sources of data for use by BIA models.) Data-gathering will be a long-range task, and in most cases, statistical rather than accounting accuracy will suffice. Large-scale centralized projections can be carried on quite well with data which could not be used at the local school level for detailed planning purposes. Thus, the time expenditures estimated for this task are not as great as they would be were extraordinarily accurate data required.

Responsibility and Involvement

The Systems Analysis Office would be primarily responsible for this data-gathering. It would serve as the coordinator of these library and file searches with the activities of the Policy Data Committee (see Task 6). Coordination with the IADC and the programming staff would be essential also to ensure the agreement of data-collection formats and procedures with the structure of the programmed models.

Staff Requirements

Position	Estimated Time Needed for Task Fulfillment
Systems Analyst	4 Man-Months
Assistants to Systems Analyst	12 " "
Educational Consultants	As Necessary
Area, Agency, and School Staff Members	As Necessary

Task 6: Determination of policies required as model inputs

Task Description

As part of Task 3, the policies required for operation of the models will be designated. It will then be necessary to form a Policy Data Committee, consisting of planners from the Central Office plus outside experts in the fields of facility, equipment and personnel needs in education systems. The committee will be responsible for making explicit all policies requiring definition. . This task can most efficiently be accomplished by the following procedure: 1) Determine the population (in terms of students or facilities) which is to serve as a denominator standard of comparison for the policy for each facility, equipment or personnel unit. This may be done by both looking at standards previously defined in other school systems and by defining the population which it is the objective to serve by providing units of a certain type. 2) Ascertain the present ratio of units to standards in the BIA schools and in other school systems. 3) Compare these ratios and select a (admittedly somewhat arbitrary) ratio which is consistent both with overall objectives of facility, equipment and personnel delivery and with cost of the unit in question. The ratio (and standard) should be subsequently modified to adjust for over- or under-delivery of services.

Responsibility and Involvement

The Policy Data Committee and its consultants will be primarily responsible for accomplishment of this task. In addition, coordination will be required 1) with the Systems Analysis Office which will designate policy to be defined, and 2) with the areas, agencies, and schools concerning their needs. In addition, it will be necessary to communicate policy decisions to the IADC for incorporation in the models.

Staff Requirements

Position	Estimated Time Needed for Task Fulfillment
Policy Committee Chairman	6 Man-Months
3 Policy Committee Members @ 4 MM	12 " "
Systems Analyst	1 " "
Educational Consultants	As Necessary
Area, Agency and School staff members	As Necessary

Implementation of the long-range planning and operations

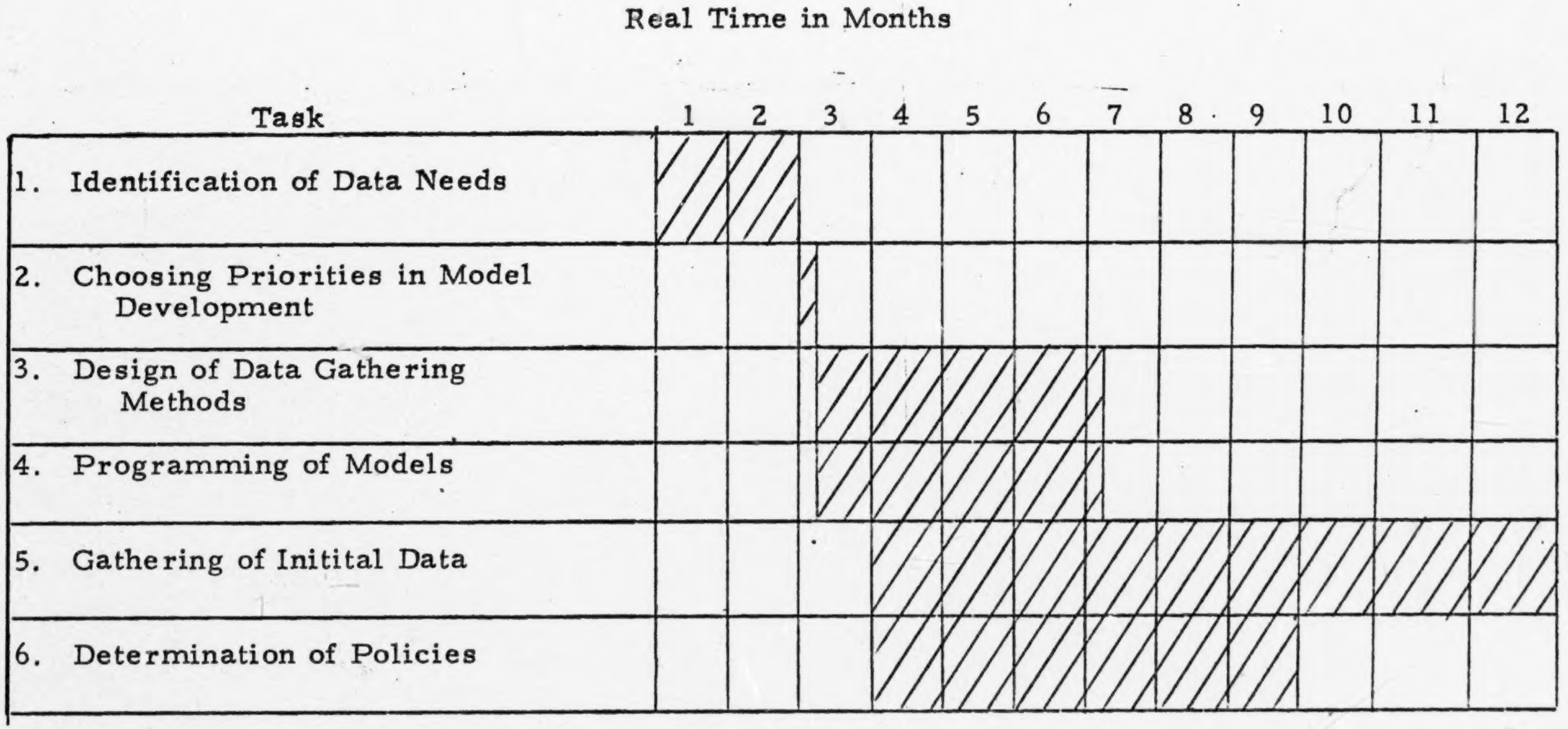


Figure 2: A PERT Chart of Model Implementation Tasks.

analysis models is a complex task requiring careful coordination among the BIA central office, the systems analysis office, the IADC central office, the systems analysis office, the IADC, and educational administrators at the area, agency and school levels. As can be seen from the PERT chart of this effort (Figure 2), the major time constraint on operationalizing the models is the task of data-gathering. It is therefore important 1) that the systems analysis staff recruited for the project be experienced in data-gathering methods, and 2) that the cooperation of all peripherally involved persons be encouraged by administrators at the BIA central office.

ONGOING ORGANIZATION

Once the tasks of model implementation have been successfully completed, staff requirements, particularly of the Systems Analysis Office, the IADC, and the Policy Data Committee, will decrease substantially. Administrators' time will shift from data-gathering to the task of utilizing the models in planning and allocating resources for BIA schools.

Though organization of the ongoing mechanism of data-gathering, providing computer runs when they are requested, and providing general administration for long-range planning, should be the task of the systems analysis office, several suggestions in these areas seem noteworthy here.

1. The Systems Analysis Office will probably need a full-time staff of one systems analyst and one administrative assistant familiar with the long-range planning system. Their tasks will include:

- providing information and necessary forms to potential model users.
- setting up model runs as requested by users and providing all necessary input to the IADC.
- maintaining the data collection system.

2. Model users should request computer runs through planning administrators at the BIA central office, which will send requests to the Systems Analysis Office. The IADC should send computer output copies to both the individual requesting the run and to the BIA central office. These steps will help to insure proper monitoring and coordination of the planning process.

3. The policy Data Committee should employ one full-time staff member to review policy data, and the adequacy of services provided under that policy, constantly. The committee itself should meet at least once a year to review all BIA schools' policies programmed in the models.

School C/E Models' Applications

The need for change *in* schools, as well as in planning *for* schools, has stimulated development of the internal school models. The application of any one or all of the internal school models at the local school level by a principal or other school administrator would imply a willingness to learn and to change.

Herein lies a problem. School administrators often resist change because it is time-costly and time is always seen as a scarce commodity, or because past attempts have been irregular and often abortive. Or because results have not seemed commensurate with effort.

Yet if key administrators do not take positive leadership in the effort to improve the total educational ecology of their school (directed toward graduating more students, who have achieved more, at a higher level, and who are better equipped to make the transition into further education and employment), it is unlikely that positive change will happen.

Application of these models must also deal with the problem of "authority". If a school administrator is "required" to implement a process for change, it is likely that he will "require" participation of staff and teachers who, in turn, will demand that students participate, willingly or not, in fulfilling at least the letter of the requirement, if not the spirit. But it is precisely the "spirit" that will usually determine whether a proposed change will succeed or fail.

On the other hand, unplanned participation can lead to equally unhappy results: a process begun which raises expectations and then is not well carried through raises formidable resistance to future attempts.

It is *not* better (as far as school systems are concerned) to have half-tried and failed than not to have tried at all.

School administrations are appropriately concerned with the allocation of scarce resources: time, personnel, space, money. And, while it is true that any complex process can be modeled, the use of a model in real life situations requires reason, commitment, flexibility, openness - in short, art.

Getting people to undertake programs for change is difficult under the best of circumstances. This is particularly true in schools. Hence, *strategic considerations for "capturing" the attention and energy of key personnel are of paramount importance.* No matter how effective in the abstract an instrumented model for change is, it is worthless if it is not used. *The following specific strategies are recommended in decreasing rank order of anticipated.effectiveness:*

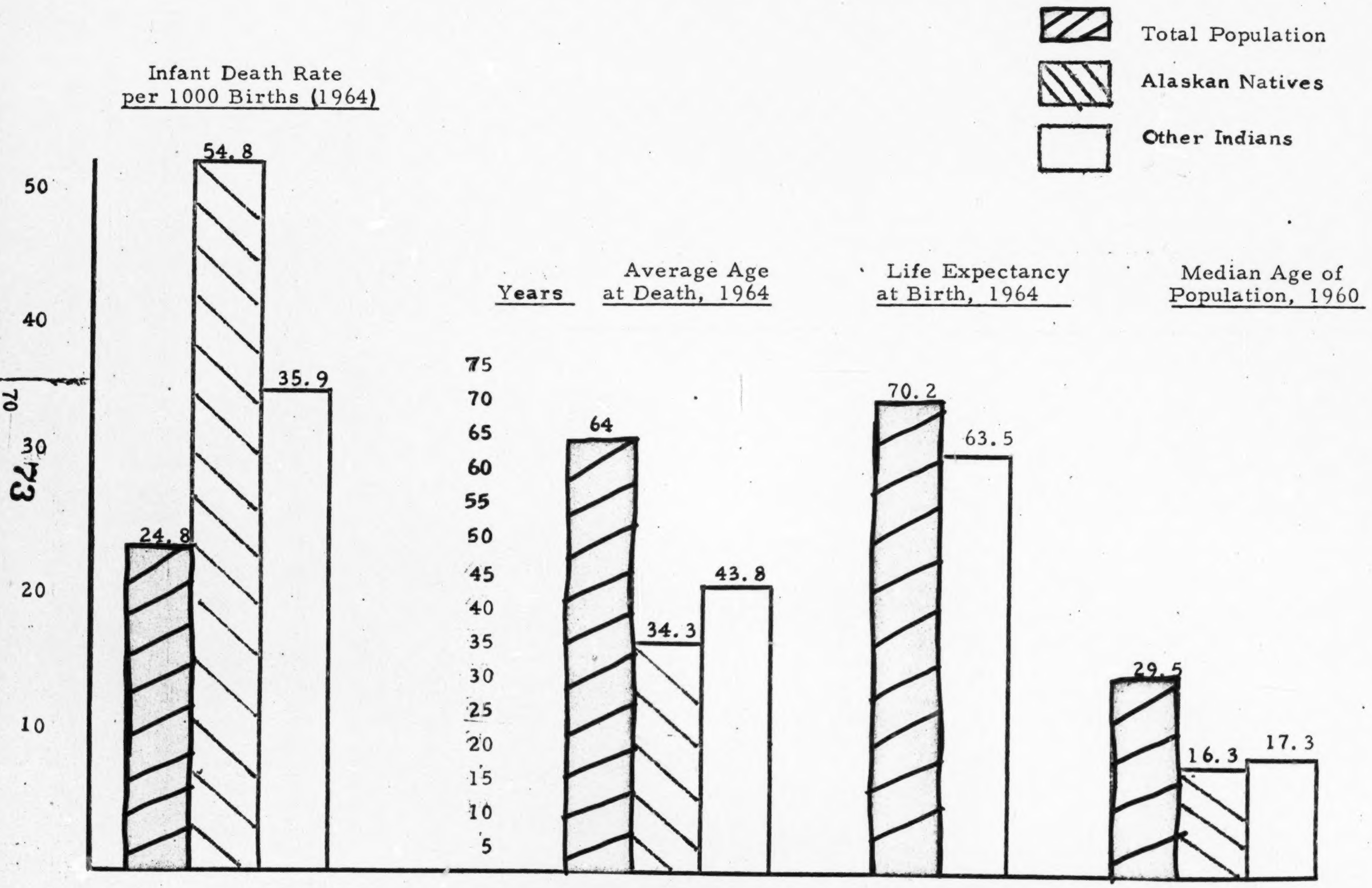
1) Change Workshops: small intense workshops of no more than 12 principals and superintendents from widely diverse schools geographically, but relatively similar in size for 7 to 10 days in the late summer or early fall. The purpose would be to introduce,and to familiarize by simulation, key administrators in the use of the four internal models. As part of the exercise, participants would be asked to help refine the models. This group would also become a primary inter-supportive task group, sharing by letter and phone their actual experiences with the use of the models during the year. If cost necessitated, one pilot workshop could be developed which would form the basis for training administrators to train new administrators the following summer after a year's experience with application of the models
2) Demonstrations: in this strategy, a "preceptor", well-versed in the models and their implementation, would visit a number of schools for at least a week, and work with the principal or superintendent *in situ* to start up model use. He would be available by telephone or short return visit to help where snags arose or additional support was needed.
3) Direct explanation: a one-time visit to the local school chief administrator for a "sales" approach to the purpose and method of the cost-effectiveness internal school models..

4) Written Introductions: here the entry of the model into the school would be by written explanation only in the form of programmed instruction for model application.
5) Media Support Possibilities: each of the four strategies above would be materially enhanced by the addition of media support in the form of an introductory film, or slides and tapes. Such support would be virtually necessary for direct explanation or written introduction of the models.

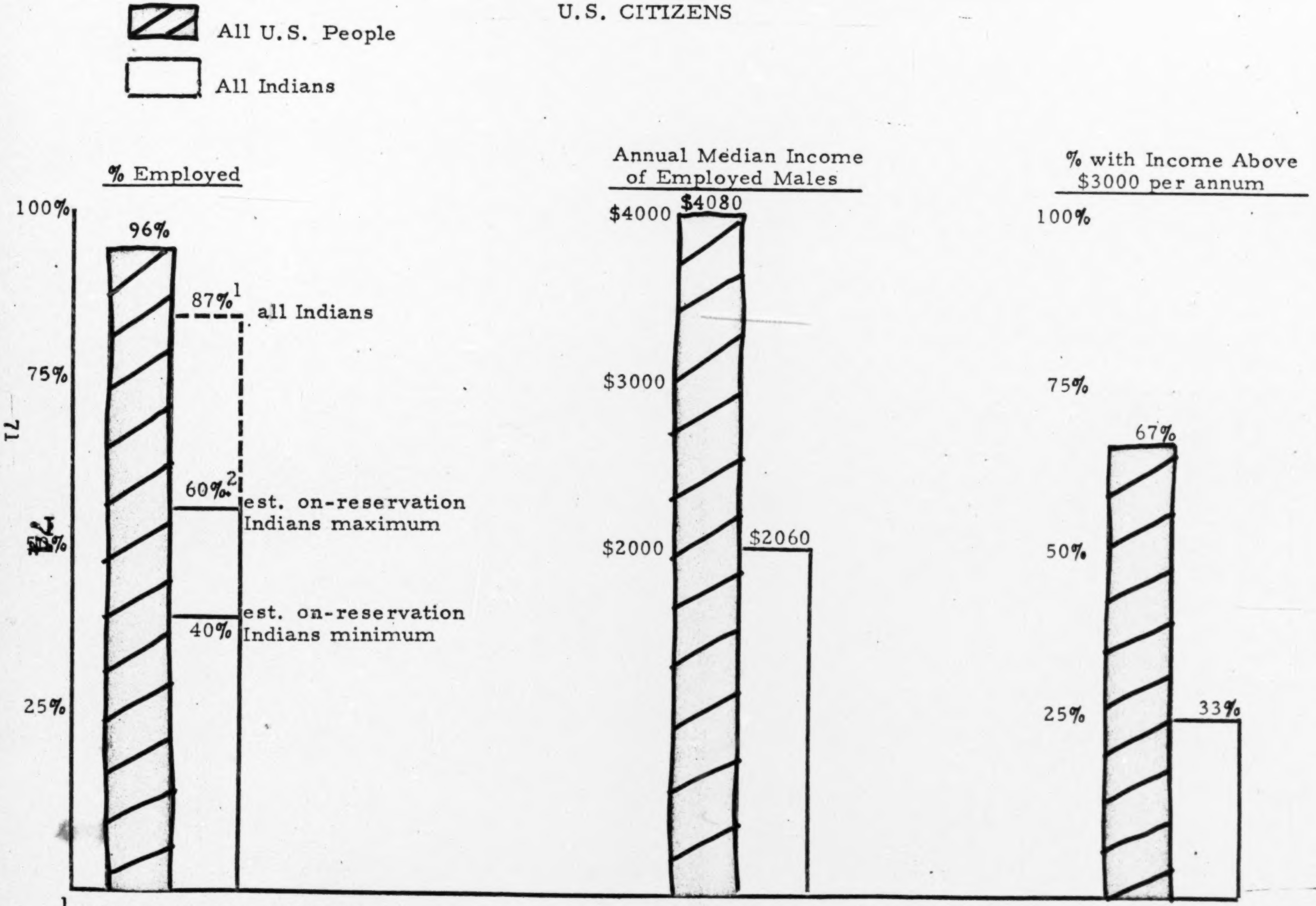
Appendix

1. Indian Health Statistics Compared to National Norms
2. Comparison of Employment and Income Levels of Indians and All U.S. Citizens
3. Comparison of Levels of Educational Achievement of Indian and Non-Indian Citizens
4. Comparison of U.S. Non-Indian and Indian Educational Achievement
5. Comparison of Rates of Graduation of Indians and All U.S. Students

INDIAN HEALTH STATISTICS COMPARED TO NATIONAL NORMS



COMPARISON OF EMPLOYMENT AND INCOME LEVELS OF INDIANS AND ALL U.S. CITIZENS



[1] 1960 Census Data (all Indians).

[2] =Estimated on-reservation employment

COMPARISON OF LEVELS OF EDUCATIONAL ACHIEVEMENT OF INDIAN AND NON-INDIAN CITIZENS

	U.S. Non-Indian Average	Indian Average	Deficits to be Corrected
Years schooling	10.6[1]	8[2]	2.6 years behind in 1960
Overage students (in all grades, stated as a % of total enrollment)	Under 20 %	42%[3] (7% 3-yrs. or more behind)	20% over-age
Academic achievement stated in average number of years behind on standardized achievement tests:			
gr. 2-5	0	1 yr.[4]	2 years retardation to overcome by the end of high school
gr. 6-8	0	2 yrs.	
gr. 9-12	0	2 yrs.	
Kindergarten enrollment as % of eligible children	73% of all 5-year[5] olds, 1965	under 10%[6] (820 children in Kindergarten in FY 1969)	13,000 more Indian children in Kindergarten

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[1] Statistical Abstract, 1967, based on 1960 Census Data

[2] Census Reports, 1960.

[3] Based on BIA annual school attendance reports, 1967.

[4] All academic achievement data is based on different tests givent to about 150 BIA schools enrolling almost 22,000 students, 3400 of whom were in the 11 high schools included in the sample.

[5] Statistical Abstract, 1967

[6] BIA Enumeration and Estimated Kindergarten-aged children.

COMPARISON OF LEVELS OF EDUCATIONAL ACHIEVEMENT OF INDIAN AND NON-INDIAN CITIZENS

(continued)

	Non-Indian	Indian	Deficit to be Corrected
High school graduation as % of those who entered high school	78%[7]	60%[8]	0% increase
College entry as % of high school graduates	50%[9]	Further training-56%[10] College-13%	4-fold increase
College graduation (% of those who entered)	32%[11]	3%[12]	10-fold increase
Graduate School completion (MA's as % of first-time students)	8 in 100[13]	Less than 1[14] in 100	At least 10-fold increase

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[7] NEA Statistics, "Rankings of the States, 1968."

[8] BIA Enrollment and Dropout Data, 1967.

[9] Statistical Abstract, 1967.

[10] BIA, 1967 Summary Placement Reports on graduates (278 of 2098 graduates went to college).

[11] Statistical Abstract, 1967.

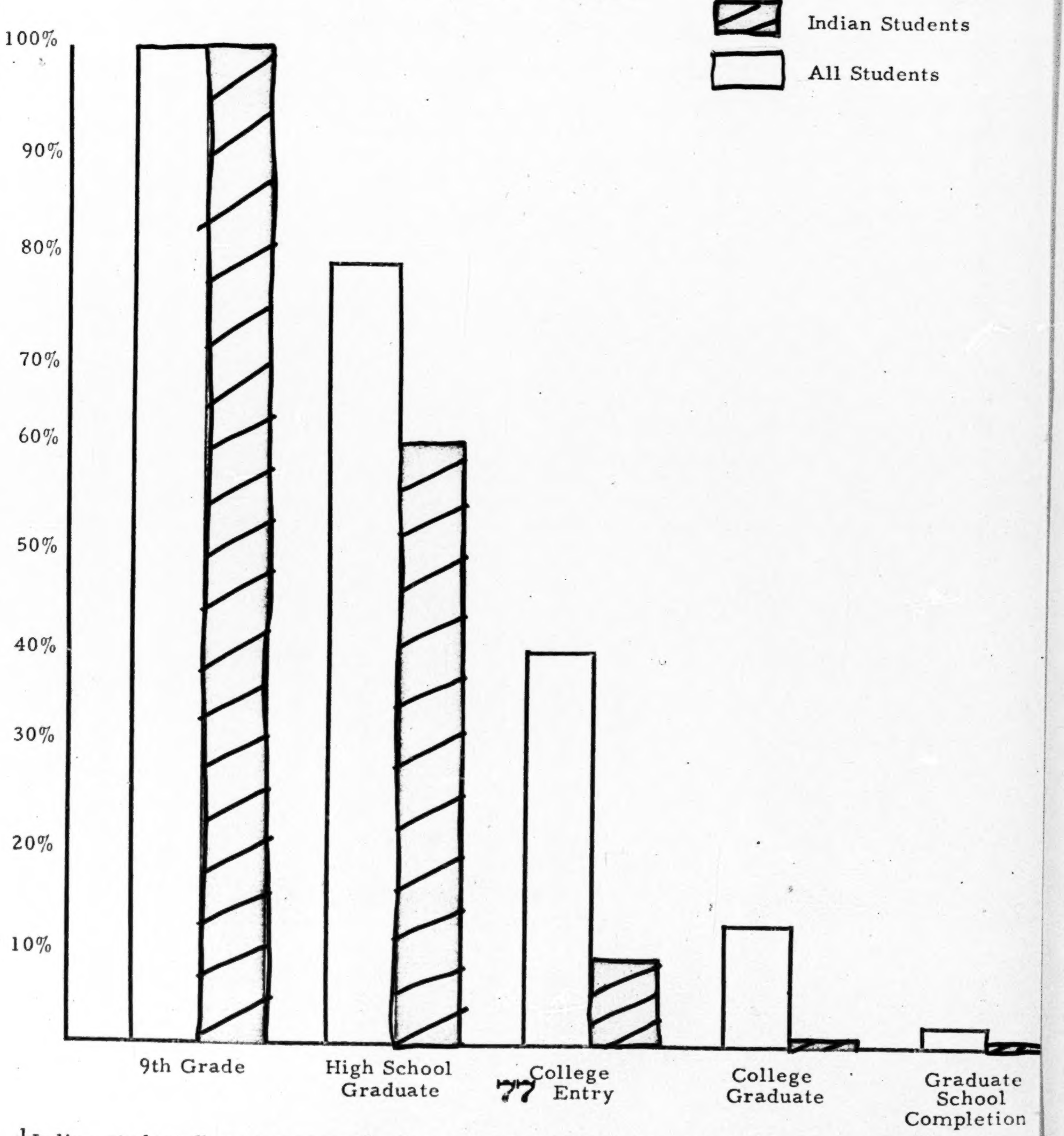
[12] BIA College Enrollment and Graduation Data.

[13] Statistical Abstract, 1967, ratio of M.A. degrees conferred, 1965, to new college students (freshmen), 1967.

[14] Based on BIA college entrance and graduation, assuming at most the same graduate school completion for Indians as the general population.

COMPARISON OF RATES OF GRADUATION OF INDIANS AND ALL U.S. STUDENTS

High School, College, and Master's Degree Graduates as Per Cents of Ninth Grade Pupils[1]



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[1] Indian student figures are projections, using 1967 as a base. Public school data is from NEA and HEW data for the period 1960-1967.